09. Natural Products and Toxinology

09.001 Chemical composition, **acetylcholinesterase inhibition of the essential oil of** *Psychotria poeppigiana* **and molecular docking simulations**. Marangoni JA[1], Volobuff CRF[1], Santos SM[1], Oliveira Júnior PC[1], Borges JAT[1], Yamazaki DAS[1], [2]Gauze GF, Formagio ASN[1] [1]UFGD, [2]UEM

Introduction: Essential oils are complex mixtures of odoriferous substances that usually present multiple pharmacology properties[1]. *Psychotria poeppigiana* Müll. Arg., popularly known as “beijo de negro” and “chapéu do diabo”, a shrub and wide distribution being found in Mato Grosso do Sul, is used in popular medicine for the treatment of fever, diarrhea and asthenia, little explored in chemical and biological studies[2]. The objective of this work was to verify the chemical composition and evaluate the acetylcholinesterase inhibition (AChE) of the essential oil of *P. poeppigiana* (EOPP) and molecular docking simulations. **Methods:** The EOPP was extracted from the leaves by the steam-drag method and quantified by GC/MS[3].The EOPP was performed by *in vitro* acetylcholinesterase inhibition using adult male rat brain parts[4]. The docking molecular of mAChE (acetylcholinesterase - *Mus musculus*) was carried using Autodock v.4.3.2, Molegro Virtual Docker v6.0 and GOLD program. Results**:** The GC/MS analysis identified 19 compounds, being germacrene D (29.38%) and bicyclogermacrene (25.21%) as the major components. Significant AChE inhibition of EOPPwas demonstrated in all structures evaluated: cerebral cortex (30.52%), hippocampus (81.50%), hypothalamus (55.88%) and striatum (83.62%). Donepezil control inhibition was 62.10%, 77.54%, 81.03% and 75.04%, respectively. The major constituents of EOPP showed interactions in both catalytic active site and peripheral active site. Germacrene D is highly hydrophobic and depth on the active site of the enzyme binding near of the key residues constituting the catalytic triad (Ser203, and His447) and choline-binding site (Trp84). Germacrene D exhibits favorable hydrophobic interactions with aromatic rings of five residues His447, Trp84, Tyr334, Tyr124 and Phe338. The molecular orientation of bicyclogermacreneshows that the compound binding near of the key residues of the peripheral site (Asp74, Tyr72, Phe338, Tyr124 and Trp286). The compound is stability by hydrophobic interactions with aromatic rings of amino acids Phe338, Phe297, Tyr124 and Trp286**.** **Conclusion:** In this study, it was evidenced the presence of 19 compounds in the essential oil of *P. poeppigiana* with predominance of sesquiterpenes. The promising inhibition of acetylcholinesterase can be attributed to the presence of these compounds, which demonstrated coupling with the active site of the enzyme, in the presence of molecular docking. **License number of ethics committee**: CEUA/ UFGD protocol nº 12/2017 **Financial support:** Capes, Fundect and UFGD **References:** 1. Bakkali, F., Food Chem. Toxicol., v. 46, p.446, 2008 2. Volobuff, C.R.F., Curr. Pharm. Biotechol., v.20, p.302, 2019 3. Adams, R.P., Identification of essential oil components by gas chromatography/mass spectrometry. 4ºed., p.804, 2007 4. Ellman, G.L., Biochem. Pharmacol., v.7, p.88, 1961

09.002 Effect of the extract of *Euterpe oleracea* **Mart**. (**Açaí**) **on physical activity and vascular response in rats submitted to aerobic physical training**. Oliveira BC, Soares RA, Bem GF, Santos IB, Carvalho LCRM, Costa CA, Ognibene D, Soares de Moura R, Resende AC UERJ

Introduction: According to the World Health Organization (WHO), the regular practice of physical exercise reduces the probability of developing cardiovascular disease, as well as improves physical performance and metabolic parameters, resulting in beneficial physiological changes to our body. Previous studies from our group demonstrated that the hydroalcoholic extract from the açaí seeds (ASE) has antioxidant and vasodilator properties increasing the NO bioavailability. Thus, the aim of this study was to evaluate if the effect of ASE treatment improves the physical performance of rats subjected to chronic exercise training and if it is associated with vascular function. **Methods:** All experimental procedures were approved by the Ethics Committee for the Care and Use of Experimental Animals of the Institute of Biology Roberto Alcântara Gomes of UERJ (CEUA No. 037/2017). The ASE was obtained according to a protocol, previously described (Rocha *et al*., 2007). Fifty wistar rats were divided into 5 groups: Training (TR), Training+Chronic ASE (TR+C-A; 200 mg/kg/day administered for 35 days), Training+Acute ASE (TR+A-A; 200 mg/kg/day administered on the day of the exercise test), Sedentary (SD) and Sedentary+Chronic ASE (SD+C-A; 200 mg/kg/day administered for 35 days). The animals in the Training, Training+ASE and Training+ASE Acute groups performed a physical training protocol for 5 weeks, 4 times a week, for 30 minutes. The training intensity was 60% of the maximum speed reached during the maximum progressive test (Matsuura *et al*., 2010). The animals body mass was measured 2 times a week. Blood glucose and lactate were measured before and after 5 weeks of physical training. In the end of the experimental protocol, the animals were anesthetized and the mesenteric arterial bed was perfused with Krebs solution. Dose-response curves were performed for acetylcholine (ACh) and norepinephrine (NE). **Results:** All training groups obtained an increase in the time and distance in the maximum progressive test in the last weeks ($p<0,05$). The TR+ASE group achieved its best performance in the second week ($p<0,05$). In the vascular reactivity test, animals from the TR and TR+ASE groups obtained greater relaxation for ACh, when compared to the SD group ($p<0,05$). Both acute and chronic supplementation with ASE reduced the vasoconstrictor response to NE in relation to the SD group, in higher doses ($p<0,05$). There was no difference in weight, in glycemic and lactate levels. **Conclusion:** Our findings suggest that ASE exerts a beneficial effect on the physical performance of the animals by increasing the distance covered and exercise time. Both physical exercise and ASE have a protective role on vascular function, which can reduce the vascular resistance and probably promote better oxygenation of the muscle.

Financial Support: FAPERJ and CNPq

09.003 Antihypertensive effect of *Alpinia zerumbet* **leaf extract in spontaneously hypertensive rats**. Menezes MP, Carvalho LCRM, Soares RA, Santos IB, Bem GF, Moura RS, Costa CAD, Resende ADC, Ognibene D UERJ

Introduction: Alpinia zerumbet is a plant from West Asia also abundant in northeastern and southeastern Brazil, where it is commonly known as Colônia. This plant is widely used in folk medicine, and its antihypertensive, diuretic and anxiolytic properties can be highlighted. Objective: This study aims to investigate the effects of chronic treatment with leaf extract from Colônia on cardiovascular changes in spontaneously hypertensive rats (SHR). **Methods:** SHR, 90 days old, treated or not with the hydroalcoholic extract of Colônia leaves (50mg/kg/day in drinking water) for 6 weeks. Wistar-Kyoto rats were used as controls. Blood pressure was assessed once a week by tail plethysmography. At the end of treatment, the animal's urine was collected for 24h and then the animals were anesthetized with thiopental (70mg/kg i.p.), blood was collected through abdominal aorta puncture, the mesenteric arterial bed (MAB) was isolated. Then, MAB was coupled to an organ perfusion system for the assessment of the responsiveness to vasoconstrictor and vasodilator agents. Lipid peroxidation was evaluated in urine, and glutathione peroxidase (GPx) and catalase (CAT) antioxidant activities were evaluated in plasma, by spectrophotometry. **Results:** The results demonstrated that the Colônia extract reduced systolic, diastolic, and mean blood pressures in treated SHR ($p<0,05$) to similar levels of control groups, but did not change the 24h urine volume. Norepinephrine promoted an increased vasoconstrictor response, and acetylcholine and nitroglycerin promoted reduced vasodilator responses in isolated MAB of SHR compared to controls ($p<0,05$). Although, the extract did not improve the vascular dysfunction in this model. The level of lipid peroxidation in urine was higher in the SHR group then in controls, while the treatment of hypertensive animals was able to reduce this parameter to similar levels of the control groups ($p<0,05$). The SHR group presented a reduced GPx activity in plasma compared with controls, while the treatment of hypertensive animals improved the activity of this antioxidant enzyme to similar levels of control groups ($p<0,05$). However, CAT activity was not different between the groups. **Conclusion:** The preliminary results of this study showed that Colônia has an antihypertensive action in SHR animals, which could be related, at least in part, to its antioxidant action. **Financial Support**: CNPq. Aebi, H. 1984;105: 121-126. · Bannister, J.V.; Calabrese, L. Methods Biochem Anal. 1982; 32: 131-138. · Daugherty JD et al. Circulation. 2012; 125(13): 1635-1642. · de Moura RS et al. J Cardiovasc Pharmacol. 2005; 46 (3): 288-294. · Draper HH et al. Free Radic Biol Med. 1993; 15 (4): 353-363. · Flohé L; Gunzler WA. Methods Enzymol. 1984; 105: 114-121. · Khurana S et al. Can J Physiol Pharmacol. 2013; 91(3): 198-212. · Lahlou S et al. Fundam Clin Pharmacol. 2003; 17 (3): 323-330. · Levine, R.L. et al. Meth Enzimol 1990; 186: 464-478. · McGregor, D.D. J. Physiol. 1965; 177: 21-30 · Mpalatinos MA et al. Phy to the r Res. 1998; 12: 442-444. · Rocha AP et al. Vascul Pharmacol. 2007; 46(2): 97-104. · Santos BA et al. Phytomedicine. 2011; 18 (7): 539-543. · Scala LC et al. Livro texto da Sociedade Brasileira de Cardiologia. 2ª ed. São Paulo: Manole. 2015; 780-785. · Sun, J. et al. Sensors 2003; 3: 276-284. · The JNC 7 Report. JAMA 2003; 289 (19): 2560-2572. · The JNC 8 Report. JAMA 2014; 311 (5): 507-520. · VII Diretrizes Brasileiras de Hipertensão Arterial. Arq Bras Cardiol. 2016; 107 (3 Supl. 3): 1-104.

09.004 Effect of the extract of *Euterpe oleracea* **Mart**. (**Açaí**) **and aerobic exercise training on physical performance and vascular changes caused by aging**. Soares RA, Oliveira BC, Bem GF, Barcellos I, Carvalho LCRM, Costa CAD, Soares de Moura R, Ognibene D, Resende AC UERJ

Introduction: The World Health Organization (WHO) has warned the process of aging of the population. According to the WHO the number of people over 60 years will be approximately 2 billion by 2050. According to the data from the Longitudinal Study of the Health of the Elderly in Brazil (ELSI-Brazil), 70% of the Brazilian elderly have some chronic disease. Thus, the treatment of chronic diseases in the aging becomes a great challenge for public health. Lifestyle adaptations involving nutritional strategies and regular physical activity practices exert a protective effect on cardiovascular diseases occasioned by aging. Previous studies of our group have demonstrated that the hydroalcoholic extract of the açaí seed (ASE), rich in polyphenols, has vasodilator and antioxidant properties. Therefore, the objective of the present study is to evaluate the effect of ASE and physical exercise on vascular function and physical performance in old rats. **Methods:** The experiments were approved by the Ethics Committee of Animal Experiments of the UERJ (protocol: CEUA/038/2017). Male Wistar rats were divided into 5 groups: Young (3 months), Old (18 months), Old + ASE (18 months + ASE 200mg / kg), Old + Training (18 months + physical training) and Old + Training+ASE (18 months + physical training + ASE 200mg / kg). The maximum stress test was developed according to Matsuura et al. 2010. Chronic physical training was performed on treadmill for four weeks, five times a week, with thirty minutes each session. The training intensity was set at 60% of the maximum speed reached in the maximum stress test. Blood glucose and lactate were measured in plasma samples. The animals were euthanized and mesenteric arterial bed (MAB) and aorta ring were isolated for the reactivity studies. **Results:** The distance (m) and time (s) were increased ($p \leq 0.05$) in the Old + Training + ASE group compared to the Old + Training group in the last exercise test. The weight (g), lactate (mmol/L) and blood glucose levels did not differ at the end of the experiment. The young group had a lower vasoconstrictor response to norepinephrine ($p \leq 0.05$) and an increase ($p \leq 0.05$) in the vasodilator response to acetylcholine compared to the Old group in MAB and aortic ring. The Old + Training and Old + ASE groups showed an increase ($p \leq 0.05$) in the vasodilator response in the aorta ring and reduction ($p \leq 0.05$) of the vasoconstrictor response in MAB compared to the Old group. The association of exercise with ASE in Old animals also increased ($p \leq 0.05$) vasodilation in MAB compared to the Old group. **Conclusion:** Our findings demonstrate a positive interaction of aerobic physical activity with ASE on the aging process by improving vascular function and potentiating the physical performance of old wistar rats, possibly due to the vasodilator and antioxidant action of the extract. **Financial Support**: CNPq and FAPERJ. **References**: Costa MF et al. Am J Epidemiol 187(7): 1345, 2018. Furchgott and Zawadzki.Nature 288: 373, 1980. Matsuura C et al. J AmSocHypertens 4: 7. 2010 Rocha APM et al. VasculPharmacol 46: 97, 2007 World Report on Ageing and Health, 2015

09.005 Oleanolic acid attenuates olanzapine-induced adipogenesis via the AMPKalpha/SREBP1 pathway in 3T3-L1 cells. Silva AVL, Silva RAC, Oliveira FTD, Nunes PIG, Freire GP, Lima RP, Pessoa ODL, Rao VS, Santos FA UFC

Introduction: Antipsychotics are effective for treating schizophrenia, butatypicalanti psychotics, like olanzapine (OLZ),can cause several adverse side effects including weight gain, hyperprolactinemia, and extrapyramidal symptoms. OLZ cause dyslipidemia through direct effects on lipid biosynthesis in rats and could upregulate the transcriptional level of sterol regulatory element binding protein (SREBP), which is a key factor for modulating lipid homeostasis in cultured cells (including glioma cells, liver cells, and adipocytes) and rats. The aim of this study was to investigate the mechanisms underlying the inhibitory effects of oleanolic acid (OA) (Sigma) on OLZ-induced adipogenesis in a well-replicated 3T3-L1 cell model. **Methods:** 3T3-L1 cells were differentiated for 10 days. The medium was replaced every 3 days and, in all exchanges, OLZ (10μM) and OA (6.25, 12.5 and 25μM) were added. The cytotoxic effect of OA on differentiated 3T3-L1 cells was assessed by the MTT test at concentrations of 6.25-50μM, as well as the effects under adipogenesis by Oil redO (ORO) staining and analysis of the protein expression of AMPK, pAMPK and SREBP1. For multiple comparisons of the parametric data, Analysis of Variance (ANOVA) was used, and the level of significance between groups was determined by the Newman Keuls test. Values of $p < 0.05$ were considered statistically significant. **Results:** The MTT test revealed no cytotoxicity at concentrations of OA 6.25-50μM in differentiated 3T3-L1 cells. ORO staining showed that OA at concentrations 6.25, 12.5 and 25 μM reduced in24, 19 and 29%, respectively, in the accumulation of lipid in 3T3-L1 cells when compared to the group treated with OLZ alone. Reduction in triacylglyceride accumulation (ORO staining) was accompanied by adecrease in the expression of SREBP1. In addition, co-treatment reversed the phosphorylation level of AMPK, determined via the ratio of pAMPK/AMPK compared with OLZ alone. **Conclusion:** This study demonstrated that the effect of OA may prevent lipid metabolism disorders caused by OLZ and that it is accompanied by the alteration of AMPK/SREBP1 pathway. These results indicated that OA could be used as a potential adjuvant to prevent the weight gain caused by the use of atypical antipsychotic medication. **Financial Support** information: CAPES,CNPq and FUNCAP.

09.006 Protective effect of *Plumeria pudica* **Latex proteins on ethanol-induced gastric injury in mice**. Souza BS, Moita LA, Sales ACS, Barbosa MS, Silva FDS, Sousa FBM, Medeiros JVR, Oliveira JS UFPI

Introduction: Latex is a fluid that can be produced by plants in specialized cells called laticifers. Molecules extracted from this fluid are described as having beneficial effects in animals and humans. The species *Plumeria pudica* is a latex-producing plant whose protein-rich fraction extracted from its latex (PLPp) has anti-inflammatory[1], antinoceptive[1], antidiarrheal[2] and protective effect on ulcerative colitis at dose of 40 mg/kg and this fraction has no toxicological effects in animals when given at the therapeutic dose. In the present study PLPp was evaluated for its protective effect in the experimental model of gastric lesion induced by ethanol in mice. **Methods:** The PLPp fraction was obtained from the collection of *P. pudica* latex in tubes containing distilled water (1: 1, v/v), followed by centrifugation and dialysis against distilled water. The resulting material (LPPp) was lyophilized for further use. In the study, female Swiss mice (*Mus musculus*;28-32g) were used and they were distributed in saline (SAL), ethanol (ETA), experimental (PLPp) groups. The animals were treated with saline or PLPp solubilized in saline at dose of 40mg/kg, intraperitoneally (ip), 1 hour prior to oral administration of 500µl of 50% ethanol. After 1 hour, the animals were euthanized and their stomachs were removed for evaluation of the tissue lesion area, histopathological analysis, measurements of malondialdehyde (MDA), glutathione (GSH), superoxide dismutase (SOD), nitrate/nitrite (NO_3/NO_2) and participation of LPPpin the production of mucus. Results**:** Significant reduction was observed in the mean of the injured areas in the gastric tissue of samples from PLPp-treated animals (0.73 ± 1.01 mm^2) when compared to ETA group (37.99 ± 3.11 mm^2). Preservation of MDA, GSH, SOD and NO3 / NO2 levels were observed in all animals treated with PLPp compared to the ETA group. The production of mucus in the stomach of PLPp-treated animals was similar to control (SAL) and histopathological analysis revealed that PLPp preserved the microstructures of the stomach tissue in relation to the animals of ETA group**. Conclusion:** Data suggest that PLPp has protective effect reducing lesions caused by ethanol in animals. Its activity should involve the action on the antioxidant system and the production of gastric mucus. **Financial Support:** CNPq N. 407413/2018-9, CAPES and FAPEPI. This work was approved by the Animal Research Ethical Committee of UFPI/CMRV(470/18). **References:** Fernandes et al.Rev. Bras. Farmacog. 25, 269, 2015.Santana et al. Biomed. Pharmacothe. 97, 1147, 2018.

09.007 Non-selective spasmolytic activity of ethanolic extract from leaves of the *Varronia dardani* (**Taroda**) **J**. **S**. **Mill**. (**Cordiaceae**). Figueiredo IAD, Silva GR, Ferreira SRD, Pessoa RF, Veloso CAG, Costa VCO, Cavalcante FA UFPB

Introduction: *Varronia genus* (Cordiaceae) contains about 125 neotropical species, which 28 are found in Brazil (MILLER, J. S., Taxon, v. 56, p. 163, 2007). In northeastern Brazil, six species are endemic (MELO, J. I. M., Phytotaxa, v. 231, p. 145, 2015), including *Varronia dardan*i (Taroda) J. S. Mill. Pharmacological studies indicated spasmolytic activity for *Varronia globose* Jacq. on rabbit duodenum and guinea-pig ileum (FENG, P. C.,J Pharm Pharmacol, v. 16, p. 115, 1962) and *Varronia brownie* (Friesen) on rat uterus (FENG, P. C., J Pharm Pharmacol, v. 16, p. 115, 1964). Thus, based on the taxonomy criteria, the aim of this study was to investigate the spasmolytic effect of the ethanolic extract from *Varronia dardani* leaves (VD-$EtOH_L$) on rat aorta and trachea, guinea-pig ileum and rat uterus. **Methods:** Wistar rats (Rattus norvegicus) male (365.7 ± 9.4 g) and female (203.0 ± 4.0 g) and guinea-pigs (Cavia porcellus, 436.4 ± 6.9 g) of both sexes were used. Tissues were removed and suspended in organ baths under appropriate conditions for each experimental protocol. Isometric and isotonic contractions were monitored and recorded. All results were expressed as the mean ± standard error of the mean (S.E.M) and analyzed using Student's t test or one-way variance analysis followed by Tukey post-test, as appropriate. IC_{50}(concentration of a drug that inhibits 50% of the maximal effect of an agonist) and EC_{50}(concentration of a drug producing 50% of its maximum effect) values were calculated by nonlinear regression analysis. All experimental protocols were approved by Ethical Committee of in Animal use of UFPB (126/2017). **Results:** VD-$EtOH_L$ relaxed phenylephrine-contracted rat aortic rings (27-729 µg/mL, n = 5) in presence (E_{max} = 75.4 ± 3.5%, EC_{50} = 238.0 ± 4.7µg/mL) and absence (E_{max} = 94.4 ± 7.8%, EC_{50} = 236.8 ± 14.8 µg/mL) of endothelium, discarding the participation of the endothelium derived relaxing factors. Similarly, VD-$EtOH_L$ relaxed in an equipotent and concentration-dependent manner the carbachol-contracted rat trachea (27-729 µg/mL, n = 5) in the presence (E_{max}= 65.3 ± 7.3%, EC_{50} = 330.3 ± 37.7 µg/mL) and absence (E_{max} = 87.3 ± 6.4%, EC_{50} = 280.5 ± 12.7 µg/mL) of epithelium, discarding the participation of the epithelium derived relaxing factors. On guinea-pig ileum, VD-$EtOH_L$(27-729, n = 5) showed concentration-dependent inhibitory effect against phasic contractions induced by both histamine (IC_{50} = 222.6 ± 26.9 µg/mL) and carbachol (IC_{50} = 123.1 ± 15.4 µg/mL), with values of E_{max} = 100%, being about 2 times more potent in inhibiting phasic contractions induced by CCh, suggesting antagonism of muscarinic receptors. In addition, VD-$EtOH_L$(9-729 µg/mL, n = 5) also showed concentration-dependent inhibitory effect against phasic contractions induced by both oxytocin (E_{max} = 98.8 ± 1.2%, IC_{50} = 82.2 ± 14.4 µg/mL) and carbachol (E_{max} = 100%, IC_{50} = 80.8 ± 16.3 µg/mL),in equipotent manner. **Conclusion:** This study showed that VD-$EtOH_L$ presents a non-selective activity on the different tissues and for the different agonists tested, presenting higher potency on rat uterus, suggesting an action in a common signaling pathway for both oxytocin and CCh.

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09.008 Hemodynamic effects induced by acute administration of ethanolic extract of *Leandra dasytricha* **in Spontaneously Hypertensive Rats**. Medeiros CFA[1], Camargo SB[2], Cechinel-Filho V[3], Vasconcelos DFSA[4] [1]USP, [2]Fiocruz, [3]Univali, [4]UFBA

Introduction: Hypertension is a chronic and high prevalence cardiovascular disease that its complications are responsible for millions of deaths worldwide. It is necessary to find alternative treatments for control this disease and natural products are considered promising sources for new drugs. The leafs of Leandra dasytricha (LDE) are used oin the traditional medicine to regulation of heart rate. Although some studies have reported pharmacological actions of thise species, no study described about its effects on cardiovascular hemodynamics. **Objective**: To investigate the possible effects of leaf extract from *Leandra dasytricha* on the hemodynamic of SHR and Wistar rats. **Methods:** This research was approved by the Ethics Committee on Animal Use of the Institute of Health Sciences, Federal University of Bahia, under the protocol CEUA - ICS/UFBA n° 130/2017. For the acute intravenous (i.v.) assay, spontaneously hypertensive (SHR) and normotensive (Wistar) rats at 12 weeks of age were used. The animals were submitted to a surgical procedure and then inserted polyethylene catheters in the femoral artery to evaluate the mean arterial pressure (MAP) and heart rate (HR), and in the femoral vein for the random administration of LDE (0.1; 1; 5, 10 and 20 mg/kg) and vehicle (saline + DMSO). In the oral administration trials, SHR rats were used in which the cardiovascular parameters were evaluated every 30 minutes for 6 hours following the administration of LDE extract (20 mg/kg) and the vehicle. All animals were maintained in a stabilization period of 30 min. to obtain the basal levels of the MAP and HR. **Results:** LDE (0.1; 1; 5, 10 and 20 mg/kg, i.v.) was able to induce hypotension in non-anesthetized SHR (%MAP= -11,22 ± 5,75; -13,16 ± 6,02; -14,26 ± 6,34; -10,04 ± 2,17; -12,42 ± 1,17; (n=5) mmHg), but not in Wistar (%MAP= -4,96± 0,43; -3,40 ± 0,54; -7,38 ± 1,61; -8,22 ± 1,43; (n=5) mmHg) compared with vehicle (%MAP= -1,12 ± 0,61 (n=5, Wistar) and %MAP= -0,31 ±0,28 (n=5, SHR) mmHg). However, no significant changes in the HR were observed in all groups. However, in the oral administration assays, no significant differences were observed in MAP and HR in the SHR compared to the vehicle, at least after 6-hour recording. **Conclusion:** The results are promising and show that *Leandra dasytricha* ethanolic extract induces a more pronounced hypotensive effect in hypertensive animals compared to normotensive animals, suggesting the possibility of its use as a therapeutic alternative for the treatment of hypertension in the future. **Financial Support**: Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq.

09.009 Effect of *Stevia sweetener* (*S. rebaudiana*) **intake on biochemical and metabolic parameters of control and obese mice**. Lima LSB, Gonçalves BGS, Malafaia TOM, Kutianski AKGV, Neves FA, Melo VMS, Parada JPPC, Yahata MA, Santos SDS, Souza ABM, Sanchez Moura A, Garcia de Souza EP UERJ

Introduction: Obesity and overweight are defined as an excessive accumulation of body fat that can be harmful to health. The main cause of obesity is the energy imbalance between the amount of calories consumed and spent. An important mechanism that can cause obesity is the metabolic programming, a phenomenon that occurs through nutritional and/or hormonal modifications that modulate crucial adjustments, which may predispose to obesity in adult life. Due to the need of loss and control of body weight associated with the increasing prevalence of obesity, the consumption of sweeteners, products that promote sweet taste without adding calories, increased in the whole world. The sweeteners can be divided into natural or artificial. Recent studies have already shown that some of them are not inert compounds, having a positive relationship with increased body weight and obesity. *Stevia Rebaudiana* Bertoni, commonly known as Stevia, contains in its leaves several specific substances, among them the rebaudioside A and the stevioside, the main glycosides derived from this plant, which has a high sweet taste, reaching 200 to 300 times greater than sucrose although having no calories. Currently, more than 100 countries have granted authorization to use Stevia as a sweetener in food, leading to an increase in the production of foods and sweetened products with this natural sweetener. Therefore, considering that researches indicate that non-caloric sweetener are not inert compounds, we evaluated the effect of natural Stevia sweetener on biochemical and metabolic parameters in control and obese mice due to overfeeding during lactation. **Methods:** All experimental procedures were approved by the Ethics Committee for the Care and Use of Experimental Animals of the Institute of Biology Roberto Alcântara Gomes of UERJ (CEUNo. 053/2017). The litter size reduction model was used to induce obesity. Litters were reduced to 3 male offspring per dam on the 3rd postnatal life (overfed group - OG). The control litters were adjusted in 6 pups per day (control group - CG).At 90 days of age, the animals in the control and overfed groups were divided into two subgroups, a control and overfed group receiving water containing 0.3% Stevia (CG-ST and OG-ST) or control and overfed groups that received water (CG-WG) and (OG-WG). The animals were sacrificed at 180 days of age.We analyzed the biochemical parameters glycemia, triglycerides and total cholesterol, biometric and morphometric parameters body weight and epididymal fat (EF) and body composition through Nuclear Magnetic Resonance Technique (NMR). **Results:** Our results showed that overnutrition during lactation led to an increase in body weight, epididymal fat and induced hyperglycemia in adult animals. Oral administration of Stevia sweetener was able to decrease body weight ($P<0,005$) and epididymal fat in OG-ST ($P<0,01$), as well as to improve glycemic response in these animals ($P<0,0095$) when we compared with the CG-WG. When we analyzed the control groups results, we observe that CG-ST presented an increased in your amount of fat weight ($P<0,0001$) when compared with the CG-WG, but this increased wasn't able to lead to body weight gain. The CG-ST also presented an increased in epididymal fat ($P<0,0001$) when compared with the CG-WG. **Conclusion:** Our data suggest that the consumption of Stevia is able to promote different metabolic responses according to the animal nutritional status, improving glycemic homeostasis and anthropometric parameters in obese mice.

09.010 Influence of exercise in combination with phy to the rapy supplementation in a mouse model of menopause. Martins JP, Silva LCS, Nunes MSN, Campos MMC PUC-RS
Introduction: The hormonal reduction in menopause leads to increased fat depots, in association with decreased muscle mass (Cabelka et al., Exp Gerontol., 115: 155, 2019). In addition to physical exercise, some phy to the rapy products have been used to restore body composition in menopause. So far, there is a lack of scientific evidence assessing their effectiveness and safety. Herein, we evaluated the effects of three lyophilized extracts currently marketed for this end, namely Ajuga turkestanica (TURK), Eurycoma longifolia (LONG) and Urtica dioica (URT) in a mouse model of ovariectomy-induced menopause, assessing the influence of exercise in this context. **Methods:** The local Animal Ethics Committee (CEUA-PUCRS 8045/17) approved the experimental protocols. Three-month-old female C57BL/6 mice were ovariectomized (OVX). Sham-operated mice (SO) served as controls. After 8 weeks, mice were randomized into two groups, submitted or not to ladder-climbing exercise, three times a week, with progressive weight increment. They were further subdivided into five groups of treatments: saline, TURK (50 mg/kg), LONG (200 mg/kg), URT (50 mg/kg), or a combination of three extracts (TLU) (SISGEN A950C15). After 8 weeks of treatment, the animals were euthanized and tissues were collected for analysis. **Results:** As expected, the OVX animals exhibited uterus atrophy. The OVX sedentary animals presented an overall increase in body weight (+68% ± 15%) when compared with SO. The exercise was able to reduce the weight gain in OVX (-91% ± 15%), whilst the plant extracts failed to recover the body weight in OVX mice, regardless of exercise. The inguinal white adipose tissue (iWAT) weight was increased in OVX sedentary mice (+21% ± 9%), a parameter that was reduced by exercise (-17% ± 10%). Gonadal white adipose tissue (gWAT) was increased in OVX mice (+24% ± 13%), without any differences in the exercise group. Treatments with TURK, LONG, and TLU, in association with exercise, produced a reduction of gWAT towards the SO values (-23% ± 13%; -30% ± 10% and -25% ± 10%, respectively). Interestingly, TLU treatment increased the interscapular brown adipose tissue (iBAT) weight in OVX sedentary mice (+25% ± 7%). The assessment of liver and kidney weights did not show any significant difference. **Conclusion:** The resistance exercise training prevented the general body weight gain in OVX mice, irrespective of treatment with any of the tested extract. Of note, the treatment with TURK, LONG, or the extract mixture (TLU) reduced the gWAT to control values. Noteworthy, TLU also induced an increase of iBAT, indicating a thermogenic effect for the extract combination. None of the lyophilized extracts led to changes of liver or renal weight. It is tempting to suggest that TLU might be an alternative to prevent visceral adiposity in menopause. Further studies are in progress to assess the extracts' effects on skeletal muscle mass, metabolism biochemical markers and toxicity indicators. **Financial support:** CAPES (financial code 001), CNPq, PUCRS.

09.011 Antifungal and cytotoxic profile of the modified gum of *Anadenanthera colubrina* **var. Cebil** (**Griseb.**) **Altschul**. Ribeiro FOS[1], Mendes MGA[1], Brito LM[2], Daboit TC[1], Pessoa CO[2], Araújo AR[1], Silva DA[1] [1]UFPI, [2]UFC

Introduction: The red angico (*Anadenanthera colubrina* var. Cebil (Griseb) Altschul) is a large arboreal species that releases anexudate of reddish color. The gum of angico (AG) obtained from the exudate shows characteristics of heteropolysaccharides composed of arabinose, galactose, rhamnose and glucuronic acid, exhibiting a great potential for biotechnological applications. However, few studies are related to the modification of gum by quaternization using N-(3-chloro-2-hydroxypropyl) trimethylammonium chloride (CHPTAC) to obtain a derivative with antifungal activity. Due to the lack of studies related to the quaternization of angico gum to acquire antifungal properties, this work investigated the antifungal profile of the modified red angico gum with the CHPTAC etherifying agent as well as its cytotoxicity. **Methods:** For this, the gum was isolated, quaternized and characterized by determination of the surface charge of the gums the Zeta potential (mV) measurements were performed. The composition of carbon, hydrogen and nitrogen was obtained through elemental analysis. Where the degree of substitution (GS) of the quaternized angicogum (QAG) was obtained by the percentage of nitrogen. The antifungal susceptibility test was conducted according to the microdilution method against the strains of *Fonsecaea pedrosoi* ATCC 46422 and *Cryptococcus neoformans* ATCC 48189. Antifungal activity analysis was then performed by Atomic Force Microcopy (AFM). The cytotoxic profile of AG and QAG was carried out by the method of 3-(4,5-dimethyl-2-thiazole)-2,5-diphenyl-2-H-tetrazolium bromide (MTT) salt against the HEK293 lineage (Human Kidney Cells Embryonic). **Results and Discussion**: From the characterization data it was possible to observe that the polysaccharide quaternized showed signs by elemental analysis, zeta potential, characteristics of the inserted group. From the antifungal assay it was possible to observe that gum inhibited the growth of the strains *F. pedrosoi*and *C. neoformans*in the concentration of 500 µg/mL. By AFM analysis of the fungal strains treated with the QAG, it was possible to observe that the gum can interact in the destabilization of the cell wall, significantly altering the surface roughness and fungal wall disorganization. AG showed a cytotoxicity of less than 1% for the cells tested and below 14% for the quaternized derivative (QAG). **Conclusion**: Thus, the results demonstrate that the quaternized derivative of angico gum presented in this study is a very promising biomaterial for biotechnological applications. **Keywords**: Angico red, Exudate, Chemical modification, Antimicrobial, Biocompatibility. **Financial support**: FAPEPI/CNPq

09.012 Evaluation of the acute toxicity and antibacterial activity from the hexane extract of *Stemodia maritima* **L**. Sousa RS, Silva JAG, Borba EFO, Ramos KRLP, Silva PA, Oliveira PAL, Silva EPM, Lima GT, Princival IMRG, Gusmão NB, Silva TG UFPE

Introduction: *Stemodiamaritima*is a shrub belonging to the *Schrophulariaceae* family. It is commonly used in traditional medicine to treat stomach pain and edema. The literature reports the presence of a great variety of chemical constituentsfor this specie, especially steroids, flavonoids and terpenes. Among biological properties*S. maritima*possess anti-inflammatory, antiviral and antioxidant activities must be highlighted.The main goal of the work was to evaluate the *S. maritima* hexane extract (SmHE) in both acute toxicity assays in mice and their activity against four bacterial strains. **Methods:** The mices (swiss, females, 28-35g) were randomly assigned in two groups: SmHE(2000 mg/kg) and the vehicle (3% of Tween 20).Systematic behavioral observations were performed at each 15 min until 1h, and then accomplished for 24 h (hour by hour). The analysis was kept day in day out by 14 days, having the body mass of the animals, water consumption and feed intake quantified. Thus, on the 14th day the animals were submitted to euthanasia, and the organs (kidney, spleen and liver mass) were dissected and examined. To determine the Minimum Inhibitory Concentration (MIC), a 96-well microdilution technique was performed. Initially, 90 µL of Mueller Hinton broth and 90 µL of the sample (SmHE), with initial concentration of 10 mg/mL were placed in the first well and serial dilution was performed up to 0.0097 mg/mL. Then, a microbial suspension (10 µl) at the concentration 1.5 x 108 colony forming units (CFU/ml) was added to the plate. The following strains, kindly provided by the collection of microorganisms from the Department of Antibiotics of the Federal University of Pernambuco, were used in the experiments: *Micrococcus luteus* (UFPEDA100), *Enterococcus faecalis* (UFPEDA138), *Escherichia coli* (UFPEDA224) and *Staphylococcus aureus* Oxacillin resistant (OxaR) (UFPEDA709). The well plates were incubated for 24 h and then treated with resazurin (0.01 mg/ml), followed by incubation for 1 h and subsequent reading of the plates. **Results**: The SmHE showed the follow central nervous system action effects: agitation, tremor, piloerection, palpebral ptosis, excessive grooming, all in the first two hours.It is important to note that neither, urination nor defecation significant physiological alteration was detected in the wet mass of the analyzed organs. Values for the vehicle were: kidneys: 0.5153 ± 0.0121; spleen: 0.5153 ±0.0121; liver: 2.0920 ± 0.0897; The values for EHSm 2000 mg/kg were : kidneys: 0.5128 ± 0.0160; spleen: 0.2252 ± 0.0101; and liver: 2.1430 ± 0.0572. The MIC from SmHE to UFPEDA100 was 0.01 mg/mL, UFPEDA138 was 0.31 mg/mL, UFPEDA224 was 0.31 mg/mL and UFPEDA709 was 0.66 mg/mL**. Conclusion:** The results of this study suggest that SmHE does not present acute toxicity in mice at the dose tested nor does it interfere with the physiological activities of the animals, besides presenting antibacterial activity against the tested strains. **Financial support**: CAPES. **Ethical Committee:** 23076.016818/2019-84.

09.013 Relaxant effects of the essential oil of *Ocimum basilicum* in isolated rat aorta. Silva KL, Silva AAV, Pinheiro CG, Silva CAO, Oliveira DMN, Carvalho EF, Gadelha KKL, Camilo KLA, Magalhães PJC UFC

Introduction: *Ocimum basilicum* L., popularly known as basil, is an aromatic herb. The essential oil present in its leaves acts as antifungal and insect repellent. The essential oil of *Ocimum basilicum* (EOOB) possesses pharmacological properties such as anti-giardia, antioxidant, anxiolytic and sedative. Some studies indicate that the plant has antihypertensive and vasodilatory properties. In order to evaluate whether EOOB is involved with such properties, *in vitro* experiments were conducted for investigating the pharmacological profile of EOOB in isolated preparations of rat aorta. This study was previously approved by the *Comissão de Ética no Uso de Animais* (CEUA) of the *Universidade Federal do Ceará* (#52/2017). **Methods:** the present study aimed to characterize the pharmacological effects of EOOB on the vascular smooth muscle of rats by recording smooth muscle contractions under isometric conditions in a data acquisition system (PowerLab™ 8/30 Instruments, ADInstruments, Australia). **Results:** in isolated rat aortic rings, EOOB (1 – 1000 µg/mL) relaxed, in a concentration-dependent manner, the contractions induced by phenylephrine (Phe – 1µM), KCl (60 mM) or U-46619 (0.3 µM) with EC50 values of 494.7 [425.7 – 569.2], 65.12 [54.5 – 77.6] and 37.44 [31.84 – 44.09]µg/mL, respectively. The EC50 to relax Phe was significantly higher than that to relax KCl or U-46619($p < 0.05$, Mann-Whitney).Either the treatment with L-NAME or the endothelium removal significantly decreased the EC50 value of EOOB to relax Phe($p < 0.05$), phenomenon not observable when preparations were contracted with KCL or U-46619.In endothelium-intact aortic rings contracted with Phe, acetylcholine (ACh) (0.1 – 10 µM) exerted relaxing effects at concentrations significantly lower than in preparations maintained in the presence of 400 µg/mL EOOB, a concentration of EOOB unable to change the relaxing profile of sodium nitroprusside on Phe-induced contractions. Treatment with ruthenium red (20 µM), a TRPV4 channel inhibitor, significantly decreased the ability of EOOB to relax Phe-induced contraction. **Conclusion:** EOOB has vasorelaxant effects on aortic rings isolated from rats. The vascular endothelium is involved in the relaxing effects induced by EOOB on aortic tissues contracted under adrenergic stimulus. Acknowledgments: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) **References**: GRAYER, R. J. et al. Infraspecific taxonomy and essential oil chemotypes in sweet basil, Ocimum basilicum. Phytochemistry, v. 43, n. 5, p. 1033–1039, 1996. PUETZ, S. Regulation of smooth muscle contraction by small GTPases.Physiology (Bethesda), v. 24, n. 79, p. 342–356, 2009. FIAN, R. et al. The contribution of TRPV4-mediated calcium signaling to calcium homeostasis in endothelial cells. J Recept Signal Transduct Res., v. 27, n. 2–3, p. 113–124, 2007.

09.014 *In vitro* **evaluation of the fungicidal potential of** *Acmella oleracea* (**L.**) **R.K. Jansen** (**Asteraceae**). Cunha LDLL[1], Porto NM[2], Almeida LFD[3], Pestana AM[1], Sousa ITC[1] [1]Unicamp, [2]Ceuma, [3]UFPB

Acmella oleracea (L.) R.K. Jansen (*Asteraceae*) is an herbaceous species occurring in tropical and subtropical regions, India, Venezuela, Africa, Indonesia, Malaysia and Brazil, popularly known as jambu. Chemically, *A. oleraceae* is characterized by the presence of phytosterols, triterpenes, flavonoids and isobutylamides. In folk medicine, the leaves and flowers of *A. oleracea* are used against tuberculosis, malaria, influenza, cough, rabies, anemia and scurvy. Pharmacological studies have shown indications as an anti-inflammatory, analgesic and diuretic. Candidiasis is an infection caused by fungi of the *Candida* type that manifest in the oral cavity. This type of pathology is common in patients who are users of total prosthesis due to favorable conditions for the growth of the fungus in the oral cavity associated with a decrease in the immune system. The aimed to evaluate the antifungal and antibiofilm action of the ethanolic extract of the leaves of *Acmella oleracea*. To perform this study, the leaves were dried and crushed, later submitted to ethanolic extraction of the plant. After extraction, an *in vitro* study was carried out in microbiological assays that will include the determination of Minimum Inhibitory Concentration (MIC), followed by the determination of the inhibitory effect on fungal growth of *C. albicans* biofilms, according to Clinical M27-A3 standardization Laboratory and Standards Institute (CLSI), using the broth microdilution technique. The microbiological results show that the *Acmella oleracea*(jambu) ethanolic extract presented fungicidal activity against the planktonic culture of *Candida* species, varying between 6.25% and 3.13% for MIC and CFM, respectively. It was further found that Nystatin was able to reduce growth at a concentration of 25,000 IU. **Keywords:** *Acmella oleracea*, *Asteraceae*, Activity fungicide Antibiofilm activity. **Reference:** Prachayasittikul, v.; Prachayasittikul, s.; Ruchirawat, s.; Prachayasittikul, v. High therapeutic potential of *Spilanthes acmella*: a review. EXCLI Journal 12: 291-312. 2,2013. Acknowledgments: Thanks to the professors responsible for the microbiology laboratory of the Federal University of Paraíba (UFPB) for giving space for microbiological tests.

09.015 Cardiovascular effects caused by the venom of *Lachesis achrochorda* **from Colombia**. Camilo KLA, Guerrero-Vargas JA, Carvalho EF, Siqueira RJB, Oliveira DMN, Silva AAV, Silva KL, Gadelha KKL, Pinheiro CG, Bindá AH, Magalhães PJC UFC

Snakebites in humans are frequent and ophidism is a public health problem in South America as well as in many other countries on tropical regions. These accidents often occur in rural areas with little availability of antivenoms becoming a factor causing high mortality. In Colombia, *Lachesis acrochorda*, popularly known as "warty or rotten", is one of the species responsible for ophidism with 2-3% of the bites but possessing a high mortality rate. Although without report of cardiotoxicity, several clinical evidences suggest cardiovascular changes in the deleterious effects of the Lachesis' venom. The aim of this work was then to evaluate the cardiovascular effects of *L. acrochorda* snake venom on isolated preparations of rat atrium or smooth muscle aorta, in addition to the effects on blood pressure of rats. The study was reviewed and approved by the animal ethics committee of Federal University of Ceara (nº 9555140618). In isolated preparations, *L. acrochorda* venom (1, 3, 10, 30, 100, 300 and 1000 µg/mL) significantly increased the magnitude of spontaneous contractions of the atrium. The atrial effects were seen at lower concentrations (1 – 30 µg/mL). In contrast, the snake venom produced, at concentrations higher than 300 µg/mL, moderate but significant relaxation on aortic preparations previously contracted with KCl or phenylephrine. In vivo, the snake venom (0.5 mg/kg, i.v.) induced immediate decrease of blood pressure, which corresponded to ~ 40% of the resting values. The hypotensive effect was followed by a gradual return to the baseline in ~60 min. At 1.5 mg/kg, occurred strong hypotension (~70% decrease on blood pressure), with a slight recovery and death in ~50% of the animals within 120 min after injection. These results show that the *L. acorchorda* snake venom on rats stimulates atrium contractions and has a moderate effect on arterial relaxation, indicating that the high hypotensive effect of this venom is not directly related whit the vasomotor activity. **Acknowledgments:** scholarships from Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Organization of the American States (OEA), and Centro de Investigaciones Biomédicas de la Universidad del Cauca-Bioterio (CIBUC-Bioterio).

09.016 Evaluation of acute toxicity and gastroprotective potential of *Croton heliotropiifolius* **Kunth**. Silva JAG, Sousa RS, Borba EFO, Silva PA, Ramos KRLP, Silva SJL, Lima GT, Silva EPM, Silva TG UFPE

Introduction: The Croton heliotropiifoliusKunth is a native sub-bush of the Brazilian Northeast, often found in the Caatinga Biome. This species is used at a popular medicine for the relief of stomach pain, dysentery and antipyretic. The objective of this work was to evaluate the acute toxicity of *C. heliotropiifolius* hexane extract (EHCh) in mice and gastroprotective activity in an ethanol induced ulcer model in rats. **Methods:** The acute toxicity test was performed according to the methodology described in Guide 423 of the OECD guidelines. The animals (mice, *swiss*, females, 25-30g) were distributed assigned to two groups (n = 6): group 1: EHCh, which received 2000 mg / kg extract and group 2: vehicle receiving 3% Tween 20. Were realized observations were performed at 15 and 30 min, 1, 2, 4 and 24 hours, and daily until the 14th day. In this period, the body mass of the animals, water consumption and feed intake were quantified. On the 14th day, the animals were euthanized, the organs dissected and the mass of the kidneys, spleen and liver were quantified. In the evaluation of gastroprotective activity, the animals (rats, *Wistar*, male, 220-280 g) were divided into five groups (n = 6): G1 – G3 – EHCh at doses of 50, 100 and 200 mg / kg, G4 - positive control receiving lansoprazol(30 mg) and G5 - negative control received vehicle. The animals were fasted for 12 hours, pretreated according to the division of the groups and after 60 min, gastric lesion was induced by absolute ethanol (4 ml / kg).After 60 min then injury induction, the animals were euthanized, the stomachs removed, washed, dissected by the greater curvature, photographed in order to calculate the index of ulcerative lesion (ILU) with*ImageJ*software. **Results:** The EHCh group did not present significant behavioral changes,only touch response during the initial 2 hours and drowsiness from the 2second hour. No macroscopic physiological changes were identified, even as in the mass (g) of the analyzed organs. The values for the vehicle were : kidneys: 0.5153 ± 0.0121; spleen: 0.1901 ± 0.0082; liver: 2.0920 ± 0.0897; Values for EHCh 2000 mg / kg were : kidneys: 0.4896 ± 0.0160; spleen: 0.2041 ± 0.0119; and liver: 1.9790 ± 0.0648.EHCh at doses of 50, 100 and 200 mg / kg, significantly reduced the ILU in 91.94, 91.61 and 93.54%, respectively.The positive control (Lansoprazol-30 mg) showed reduction of lesion indices of 94.00%**. Conclusion:** The results of this study suggest that EHCh does not present acute toxicity in mice at the dose tested and does not it interfere with the physiological activities of the animals, besides it has a remarkable antiulcerogenic activity. **Financial support:** FACEPE.

09.017 Structural characterization of two beta-neurotoxins (**MLL-Tx-I and MLL-Tx-II**) **from** *Micrurus lemniscatus* (**South American coralsnake**) **venom and their modulatory activity on SNARE-protein complex expression**. Floriano RS[1], Panunto PC[2], Torres-Bonilla KA[2], Saénz-Suarez PA[2], Rocha T[3], Fernandez J[4], Silva Júnior NJ[5], Rowan EG[6], Lomonte B[4], Hyslop S[2] [1]Unoeste; [2]Unicamp, [3]UFS, [4]Universidad de Costa Rica, [5]PUC-GO, [6]University of Strathclyde

Introduction: Coral snakes (*Micrurus*) cause potent neurotoxicity mediated by *three-finger* and phospholipase A_2 (PLA_2) toxins. *Micrurus lemniscatus* is widely distributed in the north of Brazil e occasionally causes envenomation in humans. We aimed to identify structural and pharmacologically presynaptic toxins (β-neurotoxins) from*M. Lemniscatus* venom. **Methods:** Venom was purified byRP-HPLC (C18) and the catalytically active PLA_2 fractions were tested in mice nerve phrenic-diaphragm (PND) to assess their effects on miniature end-plate potentials (MEPPs).The molecular structure of the presynaptic toxins was determined by MALDI-TOF. The action of the toxins on the ion currents (Na^+, K^+ and Ca^{2+}) was assessed in neurons isolated from rat dorsal root ganglia (DRG) by whole cell patch-clamp, whereas their effects on the motor synaptic exocytosis were analyzed in PND preparations through immunofluorescence. **Results:** The chromatography of the venom revealed numerous peaks and seven of them exhibited PLA_2 activity (P30–P34, P37 and P38). P30 exhibited a triphasic effect on the frequency of MEPPs, whereas P37 caused progressive decrease in the neurotransmitter release. The purity of the toxins P30 (MLL-Tx-I; 13.699 Da) and P37 (MLL-Tx-II; 13.332 Da) was confirmed by MALDI-TOF revealing 118 and 122 amino acids, respectively; both of toxins shared sequences with other elapidic PLA_2. Toxins did not affect $Na^+$and K^+ currents in DRG; however, MLL-Tx-I caused progressive decrease of the Ca^{2+} current, whereas MLL-Tx-II initially increased the Ca^{2+}influx followed by significant decrease. Toxins did not interact with postsynaptic receptors [α-Btx-TRITC (+)]or interfered with synaptic vesicles formation in motor end-plates from PND[anti-sinaptofisina(+)]; however, the toxins decreased the expression of proteins involved in the synaptic vesicle docking[anti-SNAP25 (–) and anti-syntaxin (–)]**. Conclusion:** The MLL-Tx-I and MLL-Tx-II are PLA_2type Asp49 and change the motor synaptic release, with MLL-Tx-I being a classic elapidic β-neurotoxin. The toxins block the Ca^{2+} current in DRG and affect the expression of SNAP25 and syntax in proteins in mammalian motor endplates. **Financial Support**: This work was supported by Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) – (processes no. 2014/24409-8 and 2016/23432-1).

09.018 Ability of fucosylated chondroitin sulfate to antagonize bee venom activities. Melo PA, Tavares-Henriques MST, Cruz-Teixeira JMC, Monteiro-Machado M, Gonçalves TS, Patrão-Neto FC, Strauch MA, Mourão PAS UFRJ

Introduction: The proliferation of Africanized bees in Brazil increases the incidence of accidents which is a public health problem. In 2017, an estimated 17,000 cases of accidents involving bee stings have resulted in more than 50 deaths. **Objectives:** In this work, we investigated the effects of fucosylated chondroitin sulfate (fucCS), a natural polysulfated glycosaminoglycan on different activities of *Apis mellifera* bee venom. **Material and Methods:** In this study we assessed by using different protocols *in vitro* as *in vivo* the effect of fucCSon the different actions of bee venom such as, cytoxic, inflammatory and enzymatic activities, in adult Swiss mice, as well as *in vitro*. The systemic effect of bee venom was evaluated by measurement of lethality and changes on the hematocrit. Different groups of animals (n = 6 each) received i.p. venom injection of different doses (5–15 µg/g) to find lethal doses, atLD50and LD100. Bee venom was also injected by intramuscular route into the mouse thighs and treated with fucCSat different doses. The changes in the hematocrit and the plasma creatine kinase (CK) activity were measured 2 hours after venom injection or after the treatment with the fucCS. The bee venom phospholipase A2 and hyaluronidase activities were also evaluated *in vitro*, and also tested the ability of fucCS to inhibit the bee venom cardiotoxicity and edematogenic activity as well as the increase of capillary permeability, by using cutaneous extravasation of Evans Blue. **Results:** All the results were statically analyzed, and the venom phospholipase and hyaluronidase activities were significantly inhibited from 3-20 µg/mL of fucCs, that also significantly reduce the edema at different doses (1- 3 µg/g). fucCs at 10 µg/mL, inhibited more than 50% the increase of vascular permeability as well as the hemoconcentration or lethality induced by the bee venom. It is noteworthy that *in vitro*, fucCs protect isolated mouse heart from the fall of heart tension and heart rate induced by venom cardiotoxicity *in vitro* in the Langendorff preparation. The *in vivo* effect was remarkable by prevent the increase of plasma CK activity induce by venom i.m. injections. **Conclusion:** Thus, fucCS appears to be as promising natural substance to be investigate and improves the development the treatment for neutralize bee venom on be massive sting accidents. Keywords: Apismellifera venom, fucosylated chondroitin sulfate, antivenom effect CEUA-UFRJ (Protocol # DFBCICB 027) **Financial Support** by CAPPES, CNPq, and FAPERJ

09.019 Antibacterial and antibiofilm activities of cordiaquinones obtained from *Cordia polycephala* **roots**. Araújo AJ[1], Barros AB[1], Oliveira MA[1], Araújo AR[1], Soares MJS[1], Freitas HPS[1], Leite JRSA[2], Pessoa ODL[3], Marinho Filho JDB[1] [1]UFPI, [2]UnB, [3]UFC

Introduction: Bacterial infections are a leading cause of death, and resistance to antibiotics and the ability to form biofilms contribute to make those infections a major public health problem (DEY et al, 2014; LEE et al, 2016). One of the strategies in the search of new agents to fight bacterial infections is the use of natural products, among them, the different classes of quinones (ASCHE, 2005). Cordiaquinones are naphthoquinones obtained from plants of the genus *Cordia* with several biological activities already described in the literature, including antifungal, larvicidal and cytotoxic activities (YAJIMA et al., 2003; IOSET et al., 2000; da SILVA FILHOet al., 1993;FREITAS et al., 2012).Thereby, the aim of this study was to evaluate the antibacterial activity of cordiaquinones B, E, L, N and O against different strains of bacteria. **Methods:** The minimum inhibitory (MIC) and bactericidal concentration (MBC) were determined following Clinical & Laboratory Standards Institute (CLSI) recommendations. The inhibition of biofilm formation was evaluated using concentrations equal to 1/2, 1/4 and 1/8 of MIC. Atomic force microscopy (AFM) was performed to identify alterations in bacterial cells morphology. **Results:** In general, the Gram-positive tested strains were susceptible to cordiaquinones B, E, L. The lowest MIC value was 7.8 µM (2.53 µg/ml) of cordiaquinone L against *Staphylococcus saprophyticus.* Cordiaquinones B and E showed the lowest MBC value, 62.5 µM (20.25 µg/ml), against the same strain. Cordiaquinones B and E inhibit biofilm formation of *S. aureus* ATCC 29213 and *S. aureus* Med 55 (clinical specimen) in about 90%. Among the morphological changes observed by AFM, it was observed that cordiaquinone L promoted a decrease in mean size of *S. saprophyticus* cells. **Conclusion:** The results presented in this work suggest that cordiaquinones have an antibacterial potential, since they can inhibit the growth of both Methicillin sensitive and resistant bacteria, besides, they can inhibit biofilm formation, an important aggravating factor of bacterial infections. **Supported by:** CNPq, CAPES, FAPEPI and INCT BioNat. **References:** DEY, D.et al. Phyther. Res. 28, 1014, 2014; LEE, J.H. et al. Sci. Rep. 6, 1, 2016; ASCHE,C. Mini Rev. Med. Chem. 5, 449, 2005; YAJIMA, A. et al.Tetrahedron Lett., 44,6915, 2003; IOSET, J.R. et al. Phytochemistry, 53, 613, 2000; da SILVA FILHO, A. A. et al. Fitoterapia, 64, 78, 1993; FREITAS, H. P. S. et al.J. Braz. Chem. Soc, 23, 1558, 2012.

09.020 Antioxidant potential of different accesses of *Maytenus ilicifolia* **in Hyperglycemic rats**. Zanatta L, Schindler M, Mezzomo H, Marins K, Regginato A, Sachett A, Chitolina R, Bevilaqua F, Zanatta AP, Dal Magro J Unochapecó

Introduction: *Maytenus ilicifolia* Mart. Ex Reissek belongs to the Celastraceae family and is popularly known as espinheira-santa. It is widely distributed in South of Brazil and used for gastrointestinal disorders. Diabetes mellitus is a metabolic disorder characterized by hyperglycemia associated with increased free radical production and depletion of the antioxidant defenses. The objective of this work was to evaluate the antioxidant potential of two accesses of *Maytenus ilicifolia* in hyperglycemic rats. **Methods:** The seeds were collected in different places in the city of Canguçu (RS). Each planta matrix gave origin to the designation of access. Later, the seeds were grown in the same place (Instituto Federal Sul Rio-grandense – Pelotas/RS) and under the same conditions. The production of the extract occurred by maceration of dried leaves in ethanol. The evaluation of antioxidante effect was performed in 50-day-old male Wistar rats. The animals were divided into different groups: hyperglycemic (control) treated with 1% tween solution; MIA (extract produced with the access 116 at doses of 150, 300 and 600 mg/Kg); MIB (extract produced with the access 122 at doses of 150, 300 and 600 mg/Kg) andglipizide (10 mg/kg). 30 minutes after the treatment the rats received a glucose overload (4g/Kg). All treatment sand glucose was administered by gavage. After 210 minutes of treatment administration, the animals were euthanized, followed by withdrawal of pancreatic and liver tissues and an aliquot of blood. The samples were processed using protocols already defined. Lipid peroxidation, non – protein thiol levels were determined by colorimetric method sand the activity of superoxide dismutase (SOD) and catalase (CAT) by kinetic method. Data were analyzed by two-way ANOVA/Tukey. **Results:** Both MIA 300 and MIA 600 mg/Kg treatments resulted in significant increased pancreatic SOD activity when compared to the hyperglycemic group, but no significant changes were observed for hepatic SOD. For the CAT activity, no significant variations occurred in both tissues. There was an increase in the pancreatic SOD/CAT ratio in the group treated with MIB 600 mg/Kg and a reduction in the group treated with MIA 150 mg/Kg. However, no changes occurred in the hepatic SOD/CAT ratio. It was found that both extracts at the dose of 600 mg/kg caused oxidant effects on the pancreas, which was evidenced by the increase in the lipid peroxidation. However, the MIA 300, MIB 300 and MIB 600 mg/Kg groups demonstrated antioxidant effects on the liver, evidenced by the reduction in lipid peroxidation. The MIA 600 and MIB 600 mg/Kg groups showed increased levels of non-protein thiols in the pancreas and liver as a way to combat lipid peroxidation. No changes were observed in plasma with any of the treatments. **Conclusion:** Our data suggest that *M. ilicifolia* extracts from different locations had the same oxidant effects on the pancreas and antioxidant action in the liver. **License number of ethics committee:** CEUA Unochapecó 004/2017. **Financial support:** Unochapecó (PIBIC/FAPE, PIBIC/CNPq) and CAPES/PPGCA.

09.021 Renal effects induced by *Bothrops alternatus* snake venom involve cytokines and oxidative stress. Monteiro SMN[1], Nogueira Júnior FA[1], Jorge ARC[1], Marinho AD[1], Silveira JAM[1], Silva HRF[1], Silva PLB[1], Chaves Filho AJM[1], Ferreira Júnior RS[2], Macedo DSM[2], Jorge RJB[2], Monteiro HSA[2] [1]UFC, [2]Unesp

Introduction: *Bothrops alternatus* envenomation is common in South Brazil. Several local and systemic effect have been described due to envenomation caused by it, leading to hemorrhage and renal failure. Acute kidney injury occurs after *Bothrops* snakebite and more researches are necessary to understand its mechanism. The aim of our study was to evaluate the effect of *Bothrops alternatus* venom (*Ba*V) on renal function in rats and on LLC-MK2 proximal tubular kidney cells. **Methods:** Isolated kidneys of male adults *Wistar*rats (n = 6, weighting 260-320 g) were perfused (*ex vivo*) with a Krebs-Henseleit solution containing 6 g/100 mL^{-1} bovine serum albumin. *BaV* (final concentration of 1 and 3 $\mu g/mL^{-1}$) were added to the system 30 minutes after the beginning of each perfusion; and were evaluated by perfusion pressure (PP), renal vascular resistance (RVR), urinary flow (UF), glomerular filtration rate (GFR), and electrolytes tubular transport percentage. Experimental ethical procedures were approved at protocol number 02/2016. Dosage of cytokines in the renal tissues of rats and oxidative stress were performed. Results**:** *Ba*V reduced PP, RVR, GFR, UF, total and proximal sodium transport (%TNa^+), and chloride (%TCl^-) on isolated kidney perfusion model. The levels of cytokines (TNF-α, IL-1β, IL-10) and oxidative stress were increased on perfused kidneys. The viability of LLC-MK2 cells (IC50: 221.3 µg/mL) was decreased by *Ba*V and necrosis was involved in cell death. **Conclusion:** These findings indicate that *Ba*V modifies renal functional parameters on isolated kidney perfusion associated with inflammatory and oxidative stress involvement.

09.022 Analgesic and anti-inflammatory effects of *Eugenia dysenterica* **leaves**. Funez MI, Marques MAS, Santos AA, Albernaz AF, Lisboa IF, Magalhães PO, Duarte DB, Nascimento PGBD UnB

Introduction: Plants of the genus Eugenia have been used by the population for food and medicinal purposes. They have antioxidant and anti-inflammatory effects among others (Malheiros et al, 2016). The aim of this study was to evaluate the analgesic and/or anti-inflammatory effects of *Eugenia dysenterica* leaf hydroalcoholic extract (EDHE). **Methods:** The experiments were conducted using Wistar male rats (200-300g) to evaluate 1) mechanical sensitization induced by carrageenan (100μg/100μL/ipl, CG) and PGE_2(100ng/100μL/ipl,), quantified by the electronic von Frey test (Insight – Brasil; Vivancos et al., 2004); 2) nociception induced by formalin (1%/50μL/id, Shibata et al., 1989); 3) oedema induced by CG (100μg/100μL/ipl) evaluated by a pletismometer (Insight – Brasil; Ferreira et al., 1978). All experiments were conducted in accordance with International Recommendations (Zimmermann, 1983) and Brazilian Legislation (Brasil, 2013a; Brasil, 2013b), approved by Ethics Committee of the University of Brasília (53/2018; 10010/2014). **Results:** The animals were pretreated with EDHE(33, 100 and 300 mg/Kg/vo) 1 h before the inflammatory stimulus (CG, PGE_2 or formalin). It was observed significant prevention of: 1) mechanical sensitization induced by both CG (55,98 and 100%) and PGE_2(79,1 and 91,34%) as well asoedma (89,35 and 89,77%)for 100 and 300mg doses, respectively; 2) nociceptive behavior induced by formalin in both phases of the test (63,78, 64,77 and 71,9% - direct activation of nociceptors - phase 1 and 40,04, 54,62 and 59% - inflammation - phase 2) for all doses tested, respectively. Thus, to our surprise, the doses of 100 and 300 mg/Kg were effective in all tests performed. Data from PGE_2 mechanical sensitization and formalin test phase 1 experiments supports an analgesic effect while those from CG mechanical sensitization, oedema and formalin test phase 2 experiments the anti-inflammatory one**. Conclusion:** The EDHE presents analgesic and anti-inflammatory activity in more than one animal model with implications for pharmaceutical development. The next step of this study involves the elucidation of the EDHE mechanism of action. Due to its antioxidant effect previously described, we believe that this possible mechanism can be explored. **Financial Support**: CNPq, Rede Pró Centro-Oeste, PIBIC/UnB **References**: FERREIRA, SH et al. Agents and Actions 8 (1 and 2): 159, 1978. POZZI MALHEIROS, R et al. Ciência e Natura, 38, 2, 2016. SHIBATA, Met al. Pain, 38, 3, 347, 1989. VIVANCOS, GG et al. BrazJ of Med and Biol Research, 37, 3, 391, 2004. BRASIL. Ministério da Ciência, Tecnologia e Inovação, Conselho Nacional de Controle de Experimentação Animal – CONCEA (Brasil). Brasília, 2013a. 50 p. BRASIL. Ministério da Ciência, Tecnologia e Inovação, Conselho Nacional de Controle de Experimentação Animal – CONCEA (Brasil). Brasília, 2013b. 54 p.

09.023 Comparative study of the renal effects of Mexican coral snake venoms: *Micrurus browni* **and** *Micrurus laticollaris* (**Squamata**:**Elapidae**). Braga JRM[1], Jorge ARC[2], Marinho AD[2], Valle MB[3], Alagon A[3], Moraes ICO[4], Monteiro HSA[2], Jorge RJB[2] [1]UFRB, [2]UFC, [3]UNAM, [4]Unicatólica

Background: In the Americas, the main terrestrial representatives of the family Elapidae are coral snakes of the genera *Leptomicrurus, Micrurus*, and *Micruroides*. The neurotoxins of *Micrurus* venom cause local tissue damage and systemic complications, which include acute renal failure (ARF). The ARF pathogenesis in snakebite is multifactorial and involves immunologic reactions, hemodynamic disturbances, and direct nephrotoxicity. The aim of this study was to compare the effects of the *M. browni* (MbV) and *M. laticollaris* (MlV) Mexican coral snakes' venoms in the renal perfusion system. **Methods:** Wistar rats (n = 6, weighting 260-320 g) were perfused with a Krebs-Henseleit solution containing 6 g 100 mL^{-1} bovine serum albumin. After 30 minutes, kidneys were perfused with MbV and MlV to a final concentration of 10 μgmL^{-1}. **Results:** MlV increased the perfusion pressure (PP) at 60, 90 and 120 min, while the MbV only in 90 and 120 min. The renal vascular resistance (RVR) decreased at 60 min of perfusion and increased at 120 min (MbV), but the MlV decreased at 60, 90 and 120 min. The effect on urinary flow (UF) was not observed with MlV, but MbV elevated at 90 and 120 min. Both venoms significantly reduced the glomerular filtration rate (GFR), and%TNa^+, K^+ and Cl^- levels from 60 min infusion. **Conclusion:** MlVand MbV altered renal physiological parameters. We suggest that MlV is more nephrotoxic on isolated perfused kidney than MbV, however the mechanisms involved in these differences it will be more studied. **Acknowledgments**: CNPq and CAPES.

09.024 Evaluation of the potential gastroprotector of *Licania macrophylla* Benth in rodents. Nascimento AA, Sales PF, Nóbrega PA, Corrêa FRFB, Cabral GNV Unifap

Licania macrophylla Bent., Popularly known as "anauerá" is a plant native to the Amazon and popularly used by local communities for the treatment of amoebic parasites, dysenteric disorders, cicatrizant and anti-inflammatory. The present study aims to investigate the gastroprotective activity of the ethanolic extract of the bark of the stem from *Licania macrophylla* in rodents. For this, experimental models were used to mimic etiological factors of gastric lesions in humans, such as acidified ethanol and non-steroidal anti-inflammatory drugs. All experimental procedures were approved by the Animal Studies Committee of the UNIFAP (n. 0019/2017). Groups of five (5) animals were used for each test dose of the extract (100, 250 and 625 mg / kg), as well as for the control groups: negative (which received vehicle only) and positive (carbenoxolone). After each experiment, the stomachs were evaluated for the following parameters: (a) total area of the lesion(mm^2), (b) percentage of ulcer (%), (c) ulcerative lesion index (ULI); (d) inhibition or cure percentage (%). The ethanol extract of L. macrophylla (EELM) presented a gastroprotective effect, expressed as mean ± SEM, in comparison to the gastric lesions induced by acidified ethanol. The results were expressed as mean ± SEM, a value of $p<0.05$ indicated significance. The results showed a significant ($p<0.001$) reduction in the doses of (250 and 625mg / kg) for the total lesion area obtained (97.15 ± 15.47, 60.86 ± 11.92, 11.83 ± 6.15), the percentage of ulcers (31.90 ± 5.74, 21.24 ± 4, 60, 4,19 ± 2,24) and the ulcerative lesion index (284.01 ± 5.09, 169.77 ± 5.14, 57.50 ± 7.92), obtaining as a percentage of cure at the doses tested the values (20.27 ± 2.91, 52.34 ± 4.83 and 83.86 ± 2.46), respectively. When the ulcers were induced by the administration of non-steroidal anti-inflammatory, the ethanol extract of *L. macrophylla* at all doses tested (100, 250 and 625 mg / kg) was able to provide a significant reduction ($p<0.001$)for the parameters evaluated: a total lesion area (2.39 ± 0.78, 3.21 ± 1.43, 4.08 ± 0.83), the percentage of ulcers (0.40 ± 0.14, 0.63 ± 0.26; 0.65 ± 0.13) and ulcerative lesion index (4.54 ± 0.37, 5.05 ± 3.26, 5.61 ± 1.49), and cure rate (84.46 ± 1 , 33, 75.00 ± 3.71 and 72.27 ± 2.06).In view of the obtained results, we can conclude that *L. macrophylla* extract presents an antiulcerogenic action similar to a standard drug of clinical practice. The effect in the absolute and acidified ethanol induction model shown by a dose dependence profile. However, complementary studies will be necessary to elucidate the mechanisms involved in the gastroprotective action of the extract tested.

Financial support: CNPq/PIBIC

09.025 Morphometric and morphology evaluation of hepatoprotection induced by monoterpene against isoproterenol damage in hypertensive and infarcted rats. Machado MLDP[1], Paulino ET[1], Oliveira KRV[1], Bernardino AC[1], Silva JCGD[1], Lopes AAA[1], Vieira SP[1], Silva DM[1], Oliveira AP[2], Ribeiro EAN[1] [1]UFAL, [2]UFPI

Introduction: TPN is a monoterpene obtained from *Protium hepthaphylum*. That has several pharmacological activities such as: anti-inflammatory (QUINTANS-JÚNIOR et al, 2011; DE OLIVEIRA et al, 2012) anti-obesity (CARVALHO et al, 2015) and cardioprotection on Spontaneously Hypertensive Rats(SHR) by isoproterenol (ISO) model (TENÓRIO,2019). ISO evoked metabolic disturbance on hepatocytes, stimulate fatty acids storage on vesicles inducing non-alcoholic steatosis (LIU, 2013). The aims of this study were to verify the hepatoprotective effects of TPN in SHR against liver damage induced by ISO. **Methods:** Experimental protocols were approved by the CEUA/UFAL nº09/2015.Male rats were allocated into 7 groups and treated for 15 days (n=5): (G1= saline 0.9% P.O/d); (G2= Infarcted saline 0.9% P.O./d and ISO 85mg/kg 2x s.c); (G3= TPN 25 mg/kg P.O./d and ISO); (G4=TPN 50 mg/kg P.O./d and ISO); (G5=TPN 75 mg/kg P.O./d and ISO); (G6=TPN 50 mg/kg P.O./d without ISO) and (G7=Nifedipine (NIF) 3 mg/kg P.O./d and ISO). On 16º day, rats were anesthetized (Ketamine 80 mg/kg + Xylazine 4 mg/kg i.p.) and morphometric tests were performed in accordance with Scherle´s methods. Morphology tests were examined under light by stereoscopy and structure of liver tissue were evaluated by histopathological assays.The results were expressed as mean ± SEM, and analyzed statistically by ANOVA one-way followed by Newman- Keuls test considered significant when *p<0.05, ** p<0.001and *** p< 0.0001. Results**:** Weight of the liver(G1= 6.92 ± 0.22g/g* *vs.* G2= 8.67 ± 0.3g/g), (G4= 6.40 ± 0.36g/g* *vs.* G2= 8.67 ± 0.31g/g), (G5= 5.22 ± 0.7g/g*** *vs.* G2= 8.67 ± 0.31g/g) and (G3= 7.44 ± 0.6g/g*vs.* G5= 5.22 ± 0.7g/g),liver weight: body weight ratio(G3=1.86 ± 0.05g/g* *vs.* G4= 2.44 ± 0.16g/g), (G3=1.86 ± 0.05g/g** *vs* G5= 2.64 ± 0.23g/g), (G4= 2.44 ± 0.16g/g **vs.* G2= 1.68 ± 0.05g/g) and (G5= 2.64 ± 0.23g/g** *vs.* G2= 1.68 ± 0.05g/g)and liver weight: femur weight ratio(G1= 65.7± 9.24g/g**** *vs.* G2= 547.4 ± 7.15g/g), (G3= 834.4 ± 9.51g/g**** *vs.* G2= 547.4 ± 7.15g/g). Thus, the morphological and histopathological aspects show that the TPN is able to inhibit the non-alcoholic steatosis induced by ISO, preventing metabolic disturbances and conserving liver histoarchitecture. **Conclusion:** Taken together, the results indicate that TPN has a significant hepatoprotective effect, however, new studies will be necessary to elucidate the mechanisms underlying this response. **Keywords:** Monoterpene; Hepatoprotection; Isoproterenol; Rats. **Financial Support:** CNPq, CAPES e FAPEAL. **References:** CARVALHO, K.M.M.B et al. The Resin from *Protium heptaphyllum* Prevents High-Fat Diet-Induced Obesity in Mice: Scientific Evidence and Potential Mechanisms. Evidence-Based Complementary and Alternative Medicine.v.2015, p.1-13.2015. DE OLIVEIRA M et al. α-Terpineol reduces mechanical hypernociception and inflammatory response, Basic Clin. Pharmacol. Toxicol., v.111, p.120-125.2012. LIU Y.T et al.The metabolic disturbances of isoproterenol induced myocardial infarction in rats based on a tissue targeted metabonomics. Molecular biosystem. V.9, p. 2823-2834. 2013. TENÓRIO, E.P, Efeito do α-Terpineol em ratos infartados. Dissertação de doutorado do Programa de Pós-Graduação em Ciências da Saúde, da Universidade Federal de Alagoas (PPGCS/UFAL). 2019. QUINTANS-JÚNIOR L.J. et al. α-Terpineol reduces nociceptive behavior in mice, Pharm. Biol., v.49, p. 583-586.2011.

09.026 The potential therapeutic effect of a polyphenol-rich extract from seeds of *Euterpe oleracea* **Mart**. (**acai**) **in renovascular hypertension**. Machado ML, Cunha LLM, Vilhena JC, Jorge TM, Carvalho LCRM, Soares RA, Santos IB, Bem GF, Ognibene D, Resende AC, Soares de Moura R, Costa CAD UERJ

Introduction: Hypertension is the most common risk factor for cardiovascular diseases worldwide. The prevalence of cardiovascular diseases over the past decades has shown rapid rise worldwide and is associated with increased cardiovascular morbidity, mortality in most developed and developing countries. Renovascular hypertension is the most common type of secondary hypertension, accounting for 3-5% of cases in the whole population. Experimental studies in animals, as well as clinical studies, have reported beneficial effects of polyphenol-rich diet consumption in preventing cardiovascular dysfunctions associated with hypertension. The seeds of Euterpe oleracea Mart. (acai) are rich in polyphenols with antihypertensive and antioxidant properties. This study, for the first time, evaluated the cardiovascular therapeutic effects of the hydroalcoholic extract obtained from the seeds of acai (ASE) fruits and to compare with Enalapril in two Kidney, one Clip (2K1C) renovascular hypertension. **Methods:** All experiments on animals were reviewed and approved by the Animal Care and Use Committee of the Biology Institute Rio de Janeiro State University (CEUA/040/2015). Young male Wistar rats were used to obtain 2K1C and Sham groups and were divided for 5 groups: Sham group, Sham+ASE group (200mg/Kg/dia); 2K1C; 2K1C+ASE (200mg/Kg/day) and 2K1C+Enalapril (30mg/Kg/day). The treatment with ASE and Enalapril were started in the third week and finished with the sixth week. We evaluated the systolic blood pressure (SBP), vascular dysfunction, serum and urinary parameters, vascular structural changes, and oxidative status. **Results:** The increase in SBP of 2K1C group was accompanied by endothelial dysfunction. Treatment with ASE and Enalapril reduced these parameters. Serum levels of creatinine and urinary protein excretion were increased in 2K1C group and treatment with ASE reduced these parameters, but treatment with Enalapril was able to reduce the levels of protein excretion. Urinary excretion of creatinine was lower in 2K1C and only treatment with ASE was able to reduce this parameter. 2K1C rats showed an increase in the thickness of the aortic media and collagen deposition. Both treatments reduced these vascular changes. The increased oxidative damage in the 2K1C group, assessed by lipid peroxidation and protein oxidation, was reduced by ASE, but Enalapril only reduced lipid peroxidation in mesenteric arterial bed (MAB) homogenate. The SOD activity was not different between groups in MAB homogenate, but the treatment with ASE increased this parameter in the 2K1C group. The Catalase activity and expression were lower in the 2K1C group in MAB homogenate and the treatment with ASE increased in the 2K1C group. The GPx activity was lower in the 2K1C group and the treatment with ASE was not able to increase this parameter. **Conclusion:** The results demonstrate, the first time, a therapeutic effect of an extract obtained from acai stone in renovascular hypertension, since hypertension, endothelial dysfunction, renal function, vascular changes, and oxidative stress were improved by oral treatment with the extract. **Financial Support**: CNPq, Capes, and FAPERJ.

09.027 Antihypertensive effects in the long-term induced by alpha-terpineol after chronic treatment in rats. Oliveira KRV[1], Paulino ET[1], Silva JCG[1], Bernardino AC[1], Machado MLDP[1], Rodrigues AKBF[1], Silva DM[1], Oliveira AP[2], Ribeiro EAN[1] [1]UFAL, [2]UFPI

Introduction: Alpha-terpineol (TPN) is a cyclic monoterpene which is naturally present in plant species. It plays an important role in the industrial field as a common ingredient in perfumes, cosmetics, and aromatic scents (KHALEEL et al, 2018).TPN induced hypotension and vasorelaxation in rats with hypertension induced by L-NAME, via NO release and activation of the NO–cGMP pathway(RIBEIRO, T.P.2010). TPN promoted acute antihypertensive effectin hypertensive ratsby L-NAME model (SABINO, C.K.B. 2013). Although the TPN has antihypertensive properties, its antihypertensive activity in spontaneously hypertensive rats has not been studied yet. **Objective:** To evaluate the antihypertensive effects of the TPN, as well as its effect on the baroreflex and vascular reactivity. **Methods:** Male Wistar-Kyoto (WKY) and Spontaneously Hypertensive Rats (SHR) were allocated on two groups. G1 (Animals received 0.9% Saline orally for 15 days) and G2 (Animals received TPN50 mg/kg/day (P.O.) for 15 days).For the measurement of arterial pressure and heart rate (HR), the rats were anesthetized with thiopental (45 mg/Kg; i.p.) and polyethylene catheters were inserted into the abdominal aorta and lower vena cava for pressure recordings and administration of drugs, respectively. Experiments were performed 24 hours after the surgery. Baroreflex sensitivity was evaluated by measuring the changes in HR with changes in mean arterial pressure (MAP) induced by bolus injections of phenylephrine (Phe, 8µg/kg) and sodium nitroprusside (NPS, 50µg/kg). For evaluation of vascular reactivity, rats were euthanized by exsanguination under anesthesia and superior mesenteric artery was removed, cut in rings, which were mounted in organ baths containing Tyrode's solution at 37°C and gassed with 95% O_2-5% CO_2. For isometric tension recordings, each ring was fixed in a force transducer connected to an acquisition system. The results were expressed as media±S.E.M and statistically analyzed by ANOVA followed Newman-keuls. The study was approved by the ethics committee (CEUA 48/2018). Results**:** In both rats, the TPN significantly reduced the systolic blood pressure (SBP), diastolic blood pressure (DBP), and MAP [WKY (MAP = G1: 125±9 *vs.* G2: 98±2 mmHg; SAP = G1: 142±8 *vs.* G2: 119±8mmHg; DAP = G1: 107±12 *vs.* G2: 77±9 mmHg], [SHR (MAP = G1: 151±7 *vs*. G2: 87± 5mmHg; SAP = G1: 178±8 *vs*. G2: 112± 2mmHg; DAP = G1: 151±8 *vs*. G2: 79±8mmHg], while HR did not change.TPN rats exhibited no significant reduction in baroreflex sensitivity to Pheand NPS.Phe (10^{-10} - 10^{-5} M) induced vasoconstriction of a concentration-dependent manner in mesenteric rings. This vasoconstrictor effect was unchanged after TPN treatment. *The concentration-response curves* for NPS (10^{-11} - 10^{5} M) in mesenteric rings was not significantly changed after compound treatment. **Conclusions:** In summary, long-term intake of TPN produces anti-hypertensive effects. Keywords: Antihypertensive; Alpha-terpineol; Rats. Finacial support: CAPES, CNPq and FAPEAL.

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09.028 Effects of Copaiba oil and Dapsone on Envenomation by *Loxosceles intermedia* **Spider in Mice**. Oliveira KC[1], Teixeira RGS[1], Ribeiro MF[1], Garcia TA[1], Oliveira FL[2], Machado TB[1], Souza CMV[3], Calil-Elias S[1] [1]UFF, [2]UFRJ, [3]Fiocruz

Introduction: Accident by spider bite has been growing a lot in recent years, being the third most frequent among the accidents by venomous animals registered in the System of Information of Notification Diseases. The spider accident of the genus Loxosceles, known as brown spider, accounts about 34% of the cases. The venom of these spiders promotes dermonecrosis at the site of the bite and triggers a systemic inflammatory response. Divergences on the effectiveness of antivenom serum in neutralizing these effects results in different therapeutic approaches. Dapsone is largely used like anti-inflammatory in loxoscelism. Copaiba oil is popularly used, especially in the Amazon, as anti-inflammatory, healing and anti-infective by several diseases. The objective of this work was to evaluate the effect of copaiba oil as a coadjuvant to the treatment of brown spider envenomation compared to the anti-inflammatory effect of dapsone. **Methods:** C57Bl/6 mice were separated in control and venom groups. The venom was inoculated into the abdomen of the animals through intradermal inoculation. Then, control and venom groups were separated into three groups: no treatment, treatment with dapsone or copaiba oil. The two treatments started 24 hours after inoculation of the venom by oral gavage and were repeated for 3 days. These groups were repeated three times and the animals had the skin and kidney removed at 3, 10 and 30 days after the envenomation to histopathological analyses. The bone marrow, blood and spleen of the all groups were removed after 3 days to flow cytometry. All animal procedures were performed in accordance with protocols approved by the Ethics Committee for the Use of Animals of the Federal Fluminense University (CEUA-UFF). **Results:** Copaiba oil prevented the migration of leukocytes to venom inoculation site on the skin, however, it promoted accumulation of hyaline material and glomerulopathies after 3 and 30 days, respectively. In relation to the migration of inflammatory cells, copaiba oil reduced the amount of monocytes in the bone marrow, blood and spleen of the mice inoculated with venom, and also decreased the recruitment of lymphocytes resulting from venom inoculation. Dapsone was more efficient in reducing myeloid cells, since it promoted the reduction of both monocytes and neutrophils in the bone marrow, blood and spleen, but did not prevent the deleterious effects of venom inoculation on the skin and kidney. **Conclusion:** With these results it is possible to propose studies of a new herbal medicine containing copaiba oil for oral use that may improve the inflammatory process triggered by venom of the brown spider associated with specific serum therapy. **References**: ELSTON, DM, Arch Dermatol, v.141, p.595, 2005; MALAQUE CMS, Springer Nature; v. p.419, 2016;
FEITOSA, DJSJ, Int Braz J Urol, v. 44, p.384, 2018. Financial suport: CAPES, FAPERJ, CNPq Process number (CEUA-UFF): 940-2017

09.029 Protective effect of Epiisopilosine, a new alkaloid from *Pilocarpus Microphyllus*, on paracetamol induced hepatic lesion in mice. Sousa GC[1], Chaves LS[1], Santos ES[1], Silva PC[1], Pacheco G[1], Sousa FBM[2], Carvalho JL[1], Lopes ALF[1], Pinho SS[1], Medeiros JVR[1] [1]UFPI, [2]UniNassau

Introduction: The liver is an important organ that performed relevant roles in the body, constituting the first line of defense against microbes, toxins and chemical agents. The liver is constantly exposed to a variety of xenobiotics and many of them with hepatotoxic potentials, such as acetaminophen (APAP), being one of the most commonly used analgesic and antipyretic drugs, because of its accessibility and efficacy for the treatment of pain and colds. However, when used in high doses, it causes accumulation of its reactive metabolite, N-acetyl-p-benzoquinone imine (NAPQI), causing, among other side effects, acute liver injury. Conventional therapy, such as n-acetylcysteine (NAC), for the treatment of liver injury is associated with secondary side effects, such cardiovascular and gastrointestinal problems. Studies suggest that alkaloids isolated from plants have an anti-inflammatory, hepatoprotective and antioxidant effect. Epiisopilosine (EPI), is an imidazolic alkaloid that has biological properties that have not yet been fully elucidated. **Methods:** Therefore, the present study aimed to investigate a possible protective effect of EPI on hepatic injury induced by APAP, following the pre-treatment model for 7 days. Two doses of EPI (10 mg/kg and 30 mg/kg), NAC (318 mg/kg) and saline 0.9% were administered viai.p. On 6st animals were fasted for 12 hours and pre-treated again. Half an hour later the lesion was induced with APAP (350 mg/kg) and after 24h the blood was collected for biochemical analysis and removal of the liver for histological and antioxidant evaluation. **Results:** It was observed in the histopathological analysis that EPI at the concentration of 30 mg/kg obtained a similar result to what was demonstrated by NAC and hepatoprotective effect when compared to the group treated with paracetamol. Hepatic markers, alanine amino transferase (ALT) and aspartate amino transferase (AST) were evaluated, where the EPI in the two doses evaluated reduced the levels of these enzymes($p < 0.001$), as well as the concentration of Malondialdehyde (MDA) at low levels in the EPI-treated groups($p < 0.05$), and maintained levels of glutathione (GSH) ($p < 0.05$). **Conclusion:** In view of these results, it can be concluded that the EPI in the present study obtained hepatoprotective activity in the hepatic injury induced by APAP. **Financial Support:** CAPES/CNPq/FAPEPI-UFPI. **CEUA Protocol Number:** 068/14.

09.030 Inhibition of GAPDH enzyme from *Trypanosoma cruzi* (**tcGAPDH**) **BY (-)-α-BISABOLOL**: *in silico* **and** *in vitro* **ASSAY**. Silva BP[1], Menezes RRPPB[1], Magalhães EP[1], Sampaio TL[1], Marinho MM[1], Santos RP[2], Martins AMC[1] [1]UFC, [2]UFC-Sobral

Introduction: Chagas disease (CD), a neglected tropical disease caused by Trypanosoma cruzi, is a major public health problem with only two drugs currently available for treatment. These drugs (benznidazole and nifurtimox) present low efficacy and high toxicity in most of the cases. Thus, many researches are focused on the discovery of new pharmacological targets to improve the development of promising molecules. Glyceraldehyde-3-Phosphate Dehydrogenase (GAPDH) is an extremely important enzyme in the glycolytic pathway onT. cruzi, oxidizing glyceraldehyde-3-phosphate in 1,3-bisphosphoglycerate, and its inhibition causes a drastic reduction on ATP production and increases oxidative stress. (-)-α-bisabolol (BIS), a sesquiterpene found on chamomille (*Matricaria chamomilla*), has previously demonstrated several bioactivities, such as antitumoral, antibacterial and leishmanicidal. Sothis work aims to evaluate the effect of BIS on GAPDH from T. cruzi (tcGAPDH) in both in silico and in vitro methods. **Methods:** The theoretical molecular docking assay was initially performed to identify possible binding sites of BIS with tcGAPDH. For this, the complex tcGAPDH-chalepin was used and the best pose of interaction between BIS and tcGAPDH was selected. In vitro assays were then performed to confirm in silico findings. The inhibition study of tcGAPDH was performed on T. cruzi epimastigotes treated with BIS (285 µM) for 15 min, 30 min, 1 hour and 2 hours. After this step, the parasites were lysed and the supernatant collected for quantification of the enzymatic activity by spectrophotometry at 0, 3, 6, 9 and 12 minutes using a commercial kit. The data were expressed as mean ± standard error mean and the comparison between groups was performed by one-way ANOVA followed by Bonferroni post-test ($p < 0.05$), using GraphPad Prism 5.0 software. **Results:** On in silicoanalysis, BIS showed interaction at the catalytic site of tcGAPDH with small distance, being able to interact with Ile13, Ser165, Cys166, His194 and Asn335. Ourin vitro assays demonstrated that BIS caused a significative inhibitionon tcGAPDH after 1 hour (238 ± 21 U/L) and 2 hours (185 ± 15 U/L) when compared to control group (424 ± 26 U/L). **Conclusion:** BIS was able to inhibit the activity of tcGAPDH on both in silico and in vitro approaches. This result can help the discovery of new trypanocidal drugs. We thank to CNPq, CAPES and UFC for their financial and institutional support. Acknowledgments: We thank to CNPq, CAPES and UFC for their financial and institutional support.

09.031 Involvement of nitric oxide and potassium channels on the vasorelaxant effect induced by *Leandra dasytricha* **extract**. Lima GBC[1], Alves QL[1], Araújo FA[2], Jesus RLC[1], Brito DS[1], Gonçalves GO[1], Moraes RA[3], Cechinel-Filho V[4], Vasconcelos DFSA[1] [1]UFBA, [2]CPqGM-Fiocruz, [3]Fiocruz, [4]Univali

Introduction: Cardiovascular diseases are responsible for high mortality rates all over the world and the use of medicinal plants as an alternative source of treatment of health problems is a common practice. Although it is little known, *Leandra dasytricha,* popularly called as "Pixirica", is used in traditional medicine to regulate the heart rate and some studies have shown its actions as a diuretic and natriuretic drug. However, no evidence about the action of "Pixirica" on the vasculature was found. **Methods:** Rats were euthanized in a CO_2 chamber and the superior mesenteric artery were removed and isolated from connective and adipose tissue. Artery rings (2mm) were obtained and kept in an organ bath containing Tyrode's solution at 37 °C and aerated with a mixture of 95% O_2 and 5% CO_2. The rings were suspended by cotton threads for isometric tension recordings and under a resting tension of 0.75g. After a stabilization period, a submaximal tonic contraction was obtained by the addition of phenylephrine (Phe 1µM) and different concentrations of the *Leandra dasytricha*extract (LDE) were cumulatively added. All experimental procedures were approved by the local Animal Use and Care Ethics Committee – CEUA/ICS UFBA (130/2017). **Results and Discussion**: LDE was able to induce relaxation on the isolated superior mesenteric arteries (87% ± 8.1, n=6). In endothelium-denuded mesenteric rings, the extract had a lower vasorelaxant effect (22.5% ± 7.1, n=6), suggesting that endothelium-derived relaxing factors are important for the relaxation effect induced by LDE. Thus, assays with endothelium-intact were performed. In the presence of KCl60mM, the vasorelaxant effect of LDE was attenuated, (29.8% ± 5.7, n=6). In the presence of L-NAME, to evaluate the participation of nitric oxide (NO) from vascular endothelium, the vasorelaxant effect of LDE was significantly reduced and similar results were observed in the presence of ODQ (10 µM), an inhibitor of soluble guanylyl cyclase (n=5).To assess the participation of K^+ channels on the vasodilatory response of the LDE, Tyrode's solution with 20 mM of KCl caused a significant reduction in the relaxation response, suggesting the participation of potassium channels in the vasorelaxant responses of LDE, however, further studies should be conducted to elucidate which K^+ channels are involved in LDE-induced vasorelaxation**. Conclusion:** Our results demonstrated promising effects of LDE in inducing vasodilation dependent on endothelial factors and these results corroborate with the effects commonly found in the popular use of the extract. Further studies will be needed to elucidate all the mechanisms involved in vasodilation response of LDE. **Financial support**: CAPES, CNPq and UFBA.

09.032 Seasonal Influence on the chemical constitution and biological effect of the essential oil from *A. Triphylla*. Parodi TV[1], Gressler LT[1], Silva LL[1], Becker AG[2], Schmidt D[1], Caron BO, Heinzmann BM[1], Baldisserotto B[1] [1]UFSM, [2]UFPR

In Rio Grande do Sul state, species of the genus *Aloysia* are widely used in traditional medicine. The essential oil (EO) components may characterize the specific plant chemotype and variations in EOs constituents, mainly in their levels may occur, depending on the growing region, cultivation conditions and collection season of plant material and biological effect. The EO were obtained from fresh leaves by hydrodistillation in different seasons over a period of two years (2009-2010) analyzed by gas chromatography-mass spectrometry (GC-MS) and identified based on the retention index (RI). Silver catfish juveniles were transferred to aquaria containing 1 L of water and the EO at concentrations of 20, 30, 40, 50, 100, 200, 300, 400, 600, and 800 µL L^{-1} first diluted in ethanol (1: 10) and controls to evaluate the time required for anesthesia induction (stages) and recovery. Experiments were approved by the Ethics Committee on Animal Experimentation of the Universidade Federal de Santa Maria (UFSM) (protocol no. 074/2014). The predominant chemical composition of EO was isomers of citral (α and β) in all seasons of the year, but higher percentage during the autumn. To others stations the compositions of EO was variable in type and low percentage of other terpenoids. Regardless of the sampling time, the increase in EO concentration proportionally decreased the time required for sedation and anesthesia induction and increased recovery time at animals, except recovery time in fish exposed to EO /autumn. Lowerconcentrationsduringthisperiodrapidlyinducesedation/anesthesia, but a longer time to recovery. The effect of these as on can be observed mainly at lower concentrations (20 to 50 µL L^{-1}), which in autumn, the EO were able to promote deep sedation effects in fishes, while in the other seasons only concentrations above 100 µL L^{-1} were able to induce weak sedation. Recovery time was longer in fish exposed to 100 µL L^{-1} EO / autumn. Increasing the percentages of α-citral and β-citral isomers in the OE composition (100 and 200 µL L^{-1} respectively) led to deep anesthesia, but there was no significant relationship with recovery time. The collection season influenced the effect of EO, and autumn seems to be the season with high yield and anesthetic efficacy. Since this was the seasonal highest period in the constitution of citral isomers. Thus, high pronounced sedative/anesthetic effects. Although we did not relate this to recovery time. **Financial Support**: CNPq and CAPES fellowships.

09.033 Evolfilene, a sesquiterpene from *Evolvulus linarioides*, attenuates ovalbumin-induced allergic airway inflammation in mice. Gomes GC[1], Miranda EP, Assis SKC[1], Souza TNC[2], Costa VCO[3], Pereira LCO[3], Silva MS[3], Ferro JNS[2], Barreto E[2], Correia ACC[1]
[1]UPE, [2]UFAL, [1]UFPB

Introduction: *Evolvulus linarioides* Meisn(Convolvulaceae) is a small blue-flowered herbendemic of Caatinga from the Brazilian state of Paraiba, which presents itself as a promising source to obtain compounds pharmacologically active. From this species, it was isolated and chemically characterized the sesquiterpene 13α-acetoxy-4,5-epoxy-cariofilan-8β-ol, named evolfilene (Pereira, Dissertation/PPgPNSB/UFPB, 2016). However, the potential pharmacologic effects of evolfilene on allergic inflammation has not yet been studied. In this study, we evaluate the effects of evolfilene(EVO) in ovalbumin-induced airway inflammation. **Methods:** Female Swiss mice (18–22 g) were subcutaneously sensitized on days 0, 7 and 14 with 0.2 ml of a solution containing 50 µg of OVA adsorbed to 5 mg of aluminum hydroxide. At day 21, 22 and 23, sensitized mice were then challenged intranasally with OVA (12.5 mg/cavity) dissolved in a final volume of 30 ul with sterile saline. Forty-eight hours after the last challenge, airway inflammation and cytokine generation in bronchoalveolar lavage fluid (BAL), and extracellular matrix deposition and mucus exacerbation in lung tissue were evaluated. All experimental procedures were approved by Committee on Use of Laboratory Animals of Federal University of Alagoas (Protocol 020/2017). **Results:** Our results showed that in BAL from OVA-challenged mice high number of total leukocyte($p<0.01$) were characterized by a significant increase in eosinophils and monocytes, but not by lymphocytes. In comparison with ovalbumin-challenged mice, the treatment with EVO at 50 and 100 µM significant decrease in the BAL the number of total leukocyte (in 45.1% and 54.9%), eosinophil (in 22% and 54%) and monocytes (in 78.2% and 60.5%). Lymphocyte counts did not show significant changes in EVO-treated allergic mice. Only in the highest dose of EVO, the increased levels of IL-4 and IL-6 induced by OVA challenge in BAL were respectively reduced in 54.8% and 39.9%, respectively. Histological analysis showed that treatment with 50 and 100 µM EVO decreased the inflammatory parameters according microscopic score (40.4% and 54.2%, respectively), abolished mucus overproduction, and reduction extracellular matrix deposition in lung parenchyma (94% and 82%, respectively) induced by allergen. **Conclusion**: These findings indicate that evolfilene may be a possible candidate for the treatment of allergic inflammation. **Acknowledgments**: UPE, LBC/UFAL and UFPB.

09.034 Effect of *Hesperozygis ringens* (**Benth**.) **Epling hexanic extract on inhibition of hemolysis**. Ferrari FT, Rosa IA, Bandeira Júnior G, Cargnelutti JF, Heinzmann BM UFSM
Introduction: Natural products have proven to be promising sources of research due to the promotion of human and veterinary health(CITARASU,T.,Aqua culture Internat, 18,403, 2017). The species *Hesperozygi sringens* (Benth.) Epling (Lamiaceae), known as "espanta-pulga", has been studied due to its pharmacological potential in fish farming. The plant essential oil presents pharmacological properties, such as anesthetic, larvicide (SILVA, L. L., J Econ Entomol, 107,1713,2014), antiparasitic and antimicrobial (BANDEIRA Jr, G., Ind Crops Prod, 97,484,2017). Due to the increasing consumption of fish, these animals are frequently cultivated and under confinement, they are often subjected to stress conditions and physiological changes, contributing to the increase of infections caused by the bacterium *Aeromonas hydrophila*. Recently the hexanic extract of *H. ringens* provided an increase in the survival rate of silver catfish (Rhamdiaquelen) experimentally infected by *A. hydrophila* (ROSA,I.A., J Appl Microbiol, 126,1363,2019). Thus, the present work aims to test *H. ringens* leaves hexanic extract as potential inhibition of hemolysis caused by *A. hydrophila*. **Methods:** The leaves (voucher specimen HDCF 6720, UFSM) were dried, ground and extracted with hexane until exhaustion. The extract was concentrated under reduced pressure, kept in desiccator to constant weight and lyophilized. A hemolytic strain of A. hydrophila (MF 372510) was used for the hemolysis inhibition assay. This bacterium was grown in Mueller-Hinton Broth (MHB) containing sub-inhibitory concentrations (0, 10, 20 and 40% of MIC) of the extract, and incubated at 28 ºC for 24 h. The bacterial culture was adjusted to an OD of 1.3 (600 nm), centrifuged at 5500 g for 10 min, and the supernatant was collected. In the microtubes, 1 ml of the supernatant from each culture (in triplicate) was mixed with 100 µl of 5% silver catfish red cells (diluted in phosphate-saline buffer - PBS). Complete control of hemolysis (1 ml of sterile distilled water and 100 µl of 5% red cells) and control without hemolysis (1 ml of sterile MHB and 100 µl of 5% red cells) were performed. Control of the diluent of the extract, ethanol, was also performed. The microtubes were incubated at 37°C for 60 min and then centrifuged at 525 g for 7 min. The hemolytic activity of the supernatant was detected by measuring its OD at 540 nm. The percentage of hemolysis was calculated by comparing total hemolysis (100%) and control without hemolysis (0%) (BANDEIRA JR.G., J Appl Microbiol,125,655,2018). Comparisons between the different groups were made using Kruskal-Wallis ANOVA and multiple comparisons of mean ranks for all groups were applied and differences were considered statistically significant when $p<0.05$ (Statistica 7.0, Stat Soft Inc., Tulsa, OK, USA). **Results:** There was no statistical difference between the groups tested. **Conclusion:** Although H. ringens hexanic extract has antibacterial activity, it is not able to inhibit hemolysis, a virulence factor of A. hydrophila, at sub-inhibitory concentrations. **Financial Support:** CAPES, PIBITICNPq.

09.035 Healing bioproduct enriched with *Abarema cochliacarpa*. Almeida SM[1], Dias ASD[1], Mota DCS[1], Souza JB[1], Graça AS[1], Moraes SZC, Shan AYKV[1], Barreto E[2], Santana AEGS[2], Albuquerque Júnior RLC[3], Araújo BSA[1], Estevam CDS[1] [1]UFS, [2]UFAL, [3]Unit

Introduction: *Abarema cochliocarpa* (Fabaceae) is an endemic plant in Brazil, popularly known as barbatimão that has been traditionally used in folk medicine to treat various diseases. Research has proven the use of this species as healing, anti-inflammatory, antibacterial, antinociceptive and anti-ulcerogenic. On the other hand, new drugs or bioactive substances are studied for the treatment of cutaneous wounds, mainly chronic ones. Given this and based on previous studies, this work proposed the formulation of a bioproduct with healing effect containing hydrometanic fraction (HMF) from the plant inner bark. **Methods:** HMF was analyzed for cytotoxicity by the MTT method on the viability of macrophagic cells J774. It was also chemically analyzed by chromatographic and spectrophotometric techniques (^{1}H NMR and ^{13}C NMR). The bioproduct was produced and characterized by Low Angle X-ray Scattering (SAXS), Polarized Light Microscopy (PLM), polydispersity index (PI), Zeta potential and pH. UV-vis spectrophotometric analysis was used to determine the sequestering activity of the DPPH bioproduct.The healing effect was evaluated in *Rattus novergicus* (n = 45) at 7, 14, 21 days, with Licence Number of Ethics Committee 57/2012.For the evaluation, the Clinical Wound Retraction Index (WRI) was expressed as mean ± standard deviation, submitted to ANOVA and Tukey's post-test ($p < 0.05$). The wounds were also analyzed by microscopy using the hematoxylin-eosin methods for observation of the granulation area and of Sirius red for collagen deposition. **Results:** HMF significantly favored the viability of J774 macrophages at all concentrations tested and is dose-dependent. The bioproduct was characterized as a microemulsion (lamellar type liquid crystal), with a slightly acidic character (5.10 ± 0.35), ideal for topical application, for bactericidal and fungicidal protection. It showed antioxidant effect (EC_{50} 24.87 ± 0.62 µg/mL) and healing with 55.18% and 100% of wound retraction, at 7 and 21 days of treatment, respectively. The HMF bioactive compound was isolated by preparative HPLC and identified as (+)-catechin. The bioproduct was patented and deposited at Instituto Nacional de Propriedade Industrial (INPI) under registration number BR1020150073810. **Conclusion**: The microemulsion with the 10% hydrometanic fraction obtained from *A. cochliacarpa* inner bark, has antioxidant and healing potential. **Financial support**: To Cnpq.

09.036 Chemical characterization and antimicrobial activity of *S. cumini* against *Klebsiella pneumoniae*. Santos AM[1], Estevam CDS[1], Santos SBD[1], Santos PAL[1], Santos LC[1], Silva AS[1], Mota KO[2], Texeira KCS[1], Araujo BS[1] [1]UFS, [2]UFAL

Introduction: Klebsiella pneumoniae is a gram-negative bacterium that causes infections in the respiratory system[2]. It's great concern the ability of many strains of *K. pneumoniae* resist the action of different antibiotics, including cephalosporins and β-lactams of broad spectrum, causing mainly nosocomial infections[5]. *Syzgiumcumini* presents several secondary metabolites that are mainly associated with the antimicrobial and antioxidant activity of the plant[4]. In this way, the objective of this work was to characterize chemically the Ethyl Acetate Fraction (FAE) of the leaves of *S. cumini* and to evaluate the antimicrobial activity against the bacterium *K. pneumoniae*. **Methods:** The chemical characterization was performed by colorimetric assays[3]. The antimicrobial activity against *K. pneumoniae* derivative ATCC 700603 was assessed by qualitative (diffusion test in agar)[1] and quantitative (minimum inhibitory concentration) tests. **Results:** The FAE of *S. cumini* presented the secondary metabolites Tannins, Flavones, flavonols and xanthones, Flavononols, Catechins, Flavonones, Steroids and Saponins. It is known that Tannins have the ability to inhibit extracellular microbial enzymes, to deprive substrates necessary for microbial growth or to have direct action on microbial metabolism through the inhibition of oxidative phosphorylation[6]. The FAE presented antimicrobial activity with a mean inhibition halo value of 15 mm and a minimum inhibitory concentration of 25 mg / mL. **Conclusion:** *S. cumini* can be considered a promising antimicrobial for the treatment of infections caused by *K. pneumoninae*.

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09.037 Effect of aqueous extract and protein fraction without phycocyanin from *Spirulina platensis* in human neutrophils and preadipocytes. Sousa JAC, Almeida AC, Azul FVCS, Pinto CS, Melo KM, Rocha TM, Viana GSB, Campos DCO, Santos FA, Oliveira HD, Pimenta ATA, Araújo EVO, Leal LKAM UFC

Introduction: Spirulinaplatensis, SP(cyanobacterium) is a rich source of nutrients including protein (60-70%),essential amino acids, fatty acids, carbohydrates and vitamins. The pharmacological effects of SP have been attributed at least in part to phycocyanin(PC). Our research group showed in previous studies the anti-inflammatory andneuroprotective effects of SP (LIMA et al., 2017). In this context, this work aimed to evaluate the effect of SP (extract and protein fraction without PC) on human neutrophil functions and adipogenesis. **Methods:** Initially, the aqueous extract of S. platensis–AESP (30% in water) was prepared in an ultrasonic device and protein fraction without PC from AESP (PFSP) was obtained through ultracentrifuges. The AESP and PFSP were characterized by HPLC, spectrophotometry and electrophoresis. The effect of AESP and PFSP (1-100µg/mL) on cells viability was evaluated through MTT test or LDH activity.The Neutrophils ($5x10^6$cells/mL) degranulation was induced by the addition of phorbol 12-myristate-13-acetate (PMA) in the absence or presence of AESP or PFSP (1-100µg/mL). The effects of test drugs were expressed by the percentage of myeloperoxidase (MPO) released by cells.The pre-adipocyte culture (3T3-L1 strain, $6x10^4$cells/mL) was incubated with test drugs (6-400µg/mL) and their effects on adipogenesis were evaluated by the intracellular lipid accumulation measured by spectrophotometry (510 nm) using Oil-Red (dye). **Results:** Chemical analysis of AESP determined the content of protein (100mg% w/v) and adenosine (64.4 mg of adenosine/100g of extract). The PFSP present proteins below 30 KDa. Neither AESP nor PFSP affected significantly the neutrophils viability (MTT test and LDH activity) when compared to the control groups. The AESP and PFSP showed effect themselves on neutrophil degranulation. The AESP increased significantly in until 27% the MPO release by cells, while PFSP according to the time of incubation increased (1-50µg/mL/15min: in until 136%) or reduced (1-100µg/mL/30min: basal levels) the MPO release by cells. Only PFSP (1-100µg/mL) inhibited partially (in until 15,6±2,3%) the degranulation of neutrophils induced by PMA. The addition of PFSP (1–100µg/mL) on pre-adipocyte culture did not affect cell viability, while AESP (6–400µg/mL) was cytotoxic. PFSP (50-100µg/mL) reduced adipogenesis in pre-adipocytes by up to 29%. **Conclusion:** The results suggest the modulatory effect of S. platensis, mainly protein fraction without PC, on neutrophils function without be toxic. In addition, thePFSP seems to interfere in adipogenesis. The preliminary study opens the perspective for application of PFSP as a tool useful to modulate neutrophil activation and to treat the obesity. **References:** LIMA, F.A.V. Neuroprotective Activities of Spirulinaplatensis in the 6-OHDA Model of Parkinson's Disease Are Related to Its Anti-Inflammatory Effects. Neurochemical research, 2017. Acknowledgments: CNPq;UFC

09.038 Evaluation of the antioxidant activity of the methanolic extract of *Miconia affinis* DC. and determination of the sensitivity profile by disk-diffusion. Sousa MGO[1], Borba EFO[1], Costa TCP[2], Silva JAG[1], Sousa RS[1], Silva EPM[1], Silva PA[1], Leite TCC[1], Gusmão NB[1], Silva TGD[1] [1]UFPE, [2]UFRPE

Introduction: The Melastomataceae family is composed of about 170genera, among which the *Miconia* genus is one quarter of the species. Species of the genus *Miconia* are distributed in different Brazilian biomes, including in the Atlantic Forest. The species*Miconiaaffinis*canbefoundthroughouttheNortheastand ispopularlyknown in Pernambuco as "*casquinho*". The objective of this work was to evaluate the antimicrobial and antioxidant activities of the methanolic extract of *Miconia affinis*. **Methods:** The bacteria used were *Staphylococcus aureus* (UFPEDA 02); *Bacillus subtilis* (UFPEDA 86); *Micrococcus luteus* (UFPEDA 100) and *Enterococcus faecalis* (UFPEDA 138), all from the Microorganism Collection of the Department of Antibiotics of the Federal University of Pernambuco (UFPE). The antimicrobial activity of the extract was evaluated by the agar diffusion method using paper discs as described by the *Clinical and Laboratory Standards Institute* (CLSI, 2012). For this test, aliquots of 30 µL of extracts at the concentration of 10 mg / mL were impregnated in the paper disks. The extracts were solubilized in DMSO and then sterilized by 0.22 µm membrane filtration (TPP). Bacterial suspensions were prepared (1.5 x 108 CFU / mL) at the concentration of 0.5 on the McFarland scale and 0.1 mL was transferred to Petri dish containing the solid medium Müller-Hinton Agar. Subsequently, the disks impregnated with the extracts were added on to the inoculated plates. Plates were incubated at 37 ° C for 24 h. For the antioxidant activity, a solution containing the stable free radical 2,2-diphenyl-1-picryl-hydrazyl-DPPH and the *M. Affinis* extract at concentrations ranging from 62.5 to 10,000 µg / mL diluted in methanol was used . The reduction of the DPPH radical was determined by the colorimetric change measured at 517 nm after 30 minutes and expressed as IC 50, defined as the extract concentration (µg / mL) required to inhibit the formation of 50% free radicals by DPPH. **Results:** The methanolic extract of *M. affinis* presented inhibition halos of 10.00 ± 0.0 mm (UFPEDA 02); 21.33 ± 0.5 mm (UFPEDA 86); 13.66 ± 0.5 mm (UFPEDA 100) and 16.6 ± 0.5 mm (UFPEDA 138). In the antioxidant activity, the extract showed IC 50 of 71.54 ± 5.8 µg / mL. **Conclusion:** The methanolic extract of *M. affinis* inhibited the growth of the bacteria used, highlighting its sensitivity profile for the microorganism *B. subtilis* and presented low sequestration capacity of the DPPH radical. **Financial support:** CAPES

09.039 Effect of *Dioscorea villosa* **on neutrophil migration in OVX mice with zymosan-induced arthritis**. Santos WM, Almeida RG, Camargo EA, Souza EPBSS, Silva LAS UFS
Introduction: Previous studies have demonstrated the effect of *Dioscorea villosa* (DVE) extract as antinociceptive, anti-inflammatory and did not show acute or subchronic toxicity in rodents (Lima et al. BMC Complement Altern Med. 2013, 13: 195).The present study was designed to investigate the effect of DVEon the neutrophils migration into the articular cavity of knee joint in ovariectomized (OVX) mice with zymosan-induced arthritis. **Methods:** Female Swiss mice were OVX through bilateral surgery with dorsal incision. After two weeks, the animals were divided in five groups; group 1 received saline intra-articularly (negative control), group 2 received vehicle v.o (0.9% saline with 0.1 % of tween 80), group 3, 4 and 5 received pre-treatment for 20 days at doses 1, 10 , 100 mg/Kg, respectively per v.o. After pre-treatment, zymosan A (100ug / cavity in 10 uL sterile saline) was injected intra-articularly, four hours later, to evaluate neutrophil migration, the articular cavities of knee joints were washed twice with 5 µL PBS / EDTA and diluted to a final volume of 100 µL. Total cell counts and differential cell counts were performed, stained with H&E stain and results were expressed as mean of neutrophils per cavity ± SEM. The estrous cycle analysis was performed with animals' vaginal lavage before and after treatment. After the 20 day of treatment the mice uterus with and without ovariectomy were collected for the analysis of the wet weight. The means were compared by ANOVA followed by Tukey's post hoc test for multiple group comparisons ($p \leq 0.05$). **Results:** The group 2 (control positive) of OVX mice without pre-treatment showed an increase of neutrophils (18.89 ± 5.08) into the intra-articular cavity when compared to neutrophil migration (3.0 ± 0.24) of group 1 (negative control). The group 3, 4 and 5 with pre-treatment of DVE (1, 10 and 100 mg/kg), showed a decrease in neutrophils migration (4.51 ± 0.43; 6.51 ± 0.970; 3.76 ± 0.22) when compared with positive control. Earlier the treatment about 90% of the animals of the groups 3, 4 and 5 were in the metaestrus phase, but after the treatment about 62% of the animals changed their cycles to estrus and proestrus phase. In the DVE pre-treatment groups there are not increase the wet uterus (g) (0.05 ± 0.004; 0.15 ± 0.02; 0.08 ± 0.007) when compared with the positive control group without OVX (0,11± 0,02)**.**
Conclusion: These findings suggest that DVE has anti-inflammatory activity, reducing neutrophils migration into the intra-articular cavity in experimental model of zymosan-induced arthritis. Moreover, it was suggested that isolated substances from DVE may have modulating activity, presumably acting as an agonist of estrogen receptors. Acknowledgments: CNPq for **Financial Support**. Research approval by the Animal Research Ethical Committee: Protocol 71/2018.

09.040 Effects of supplementation with *S. Platensis* on oxidative stress and via MAPK in uterus of Wistar rats. Lacerda Júnior FF[1], Ferreira PBF[1], Diniz AFA[1], Silva MCCS[1], Araújo LCC[2], Silva AS[1], Costa BA[1] [1]UFPB, [2]USP

Introduction: Several factors increase production of reactive species that in turn activate the mitogen-activated protein kinases (MAPK)pathway, causing oxidative stress that damages cell membrane and macromolecules and has been related to problems in the female reproductive system, such as endometriosis, polyps and abortion (Agarwal, A. et al. Reprod Biol Endocrinol, v. 10, p. 49, 2012.). In this context, *Spirulina platensis* (SP), an algae with antioxidant potential (Mazo V. K et al.Vopr. Pitan, 73: 45-53, 2004), promoted the decrease oxidative stress in rat aorta (Brito, Thesis, UFPB, 2014) and ileum (Ferreira, Dissertation, UFPB, 2017).Thus, it was decided to investigate whether supplementation would alter the levels of malondialdehyde (MDA), antioxidant capacity in plasma and uterus, superoxide dismutase (SOD) expression and pathway modulation of MAPK in Wistar rats. **Methods:** Female Wistar rats (150-250 g) were divided into control groups (GS), and groups supplemented with oral algae at doses of 50 (GSP50) and 100mg/kg (GSP100), for 8 weeks, and 24 h prior to euthanasia received diethylstilbestrol (1 mg/kg, s.c.) for induction of estrus. After euthanasia, cardiac puncture was performed for blood collection and the uterus was removed, both for analyzes. Results were expressed as mean and standard deviation of the mean and analyzed by one-way ANOVA followed by the Tukey post-test (n = 5). **Results:** Supplementation with SPat doses of 50 and 100 mg / kg did not alter plasma MDA concentration; in the uterine tissue, the decrease in MDA concentration in GSP100 (1.0 ± 0.04) was observed in comparison to the other groups (GS = 1.5 ± 0.12; GSP50 = 1.2 ± 0.2). Assessing the total antioxidant capacity in the plasma, it was observed that there was no difference between the groups supplemented with SP (GS50 = 30.0 ± 0.8%, GS100 = 26.4 ± 1.2%) in relation to GS (29.0 ± 0.3%). In the uterus, the percentage of oxidation increased in GSP100 (95.6 ± 3.8%) when compared to GS (83.6 ± 3.4%) and GS50 (77.6 ± 2.5%). In rats supplemented with SP an increase in SOD protein expression was observed in uterine tissues of the GSP100 group (1.04 ± 0.11) when compared to GS (0.37 ± 0.07) and GSP50 (0.37 ± 0.16). When evaluating the expression of MAPK in the uterus of rats supplemented with SP, was observed that there was no change in JNK expression (GSP50 = 0.70 ± 0.16; GSP100 = 0.61 ± 0.08), when compared to GS (0.88 ± 0.03), different from that observed with respect to the expression of ERK1/2 protein, in which supplementation with algae was shown to decrease expression of this protein in GSP50 (0.57 ± 0.07) and GSP100 (0.54 ± 0.09) when compared with GS (1.0 ± 0.07). **Conclusions:** The supplementation with *S. platensis* in rat uterus by increasing the expression of uterine SOD with consequent decrease of ERK1/2 expression, evidencing the promising role of this algae in uterine disorders related to oxidative stress as inflammatory process, as well as suggests a role in the prevention of disorders characterized by cell growth such as cancer. **Financial support**: CNPq, CAPES, PPgPNSB/UFPB. **Research approval**: CEUA/UFPB (0211/14).

09.041 Proteins from *Plumeria pudica* Latex prevent inflammation and alveolar bone loss on periodontitis induced by ligature in rats. Oliveira NVM, Oliveira LES, Souza BS, Moita LA, Sales ACS, Barbosa MS, Silva FDS, França LFC, Vasconcelos DFP, Oliveira JS UFPI

Introduction: latex is a fluid that can be obtained from plants and is source of molecules with pharmacological potential. Proteins extracted from *P. pudica* latex (LPPp) exhibit anti-inflammatory and antioxidant activity in several animal models[1,2,3] and have low systemic toxicity. Chronic periodontitis is an inflammatory disease mainly characterized by the destruction of the periodontal tissues that support the tooth, especially the alveolar bone. When not treated properly, it can lead to tooth loss. Taking into account the results described for the LPPp fraction and the injuries associated to periodontitis, this study aimed to evaluate the effects of LPPp on ligature-induced periodontitis in rats. **Methods:** The animals were divided into three groups: negative control group (without induced periodontitis) periodontitis group (animals with induced periodontitis and untreated) and LPPp group (animals with induced periodontitis and treated with 40 mg/kg i.p.). Periodontitis was induced by ligature with 3.0 nylon thread placed in the lower first molar of the rats. The animals remained for 20 days with the ligature and they were daily treated with LPPp. After 20 days, macroscopic clinical evaluation were performed for Gingival Bleeding Index (GBI) and Probing Depth Index (PDI). Blood samples were collected for analysis of markers of liver aminotransferases (ALT and AST) and renal (creatinine and urea) damages. After euthanasia, the mandibles were removed and analyzed morphometrically to assess the loss of alveolar bone height (ABH). Gingival tissue was used to measure myeloperoxidase activity (MPO). Liver and kidney were removed for systemic evaluation of glutathione (GSH) levels, malonaldehyde (MDA) concentrations and MPO activity. **Results:** Macroscopic analyzes revealed reduction of GBI (50.5%) and PDI (50.6%) and gingival MPO levels in the animals treated with LPPp when compared to ligated group without treatment. Significant reduction in ABH (4.68 ± 0.25 mm) of animals treated with LPPp was observed when compared to animals without treatment (5.51 ± 0.14 mm). GSH and MDA levels were preserved in animals treated with LPPp in both hepatic and renal tissue to values similar to control without induced periodontitis. Biochemical analyzes of hepatic markers indicated preservation of ALT and creatinine levels in animals treated with LPPp. **Conclusion:** Daily treatment of animals with LPPp at 40 mg/kg reduced inflammatory parameters and alveolar bone loss associated to periodontitis. This event was accompanied by the preservation of serum marker levels and tissue oxidative stress. **Finacial Support:** CNPq N. 407413/2018-9, CAPES and FAPEPI. This work was approved by the Animal Research Ethical Committee of UFPI (385/17). **References**: Fernandes et al. Rev. Bras. Farmacog. 25, 269, 2015. Santana et al. Biomed. Pharmacothe. 97, 1147, 2018. Oliveira et al. Life Sci. 231, 2019.

09.042 Evaluation of gastroprotective activity of *Tocoyena hispidula* **Standl L. in rodents**. Batista CL, Sousa JSLL, Sousa AJC, Silva Batista WWB, Fernandes HB, Pereira da Silva E, Araújo JAN, Alves EAS, Meneses Oliveira RC UFPI

Gastric ulcer is one of the main gastrointestinal disorders, being considered a common disease that affects more than 10% of the world population, with increasing incidence and prevalence and high rates of morbidity and mortality. In Brazil, according to the Ministry of Health, 11,532 hospitalizations were reported in 2018, related to the presence of gastric and duodenal ulcers, with a mortality rate of 9.86%. *Tocoyena hispidula* Standl. L., popularly known as cerrado-flower, “angeliquinha”, “angelica” or “jenipapinho” is a subshrubs popularly used as medicinal therapy for tummy pain and inflammation in the uterus (bottle). Compounds such as coumarins, triterpenoids and iridoids have been identified in its composition, which may have an important anti-inflammatory, antiulcerogenic and antioxidant action. This study aimed to investigate the gastroprotective activity of *Tocoyena hispidula* Standl ethanolic extract (Th-EtOHcc) in gastric lesions in rats or mice. Possible mechanisms of action. Swiss mice (30-35 g) were used to assess the ulcerated area of gastric lesions induced by ethanol. Wistar rats (180-250 g) were used to evaluate the ulcerated area of gastric lesions induced by ischemia and reperfusion, besides the preservation of the mucus barrier in the pylorus ligature model (CEUA 413/17). In the model of absolute ethanol-induced gastric ulcers, Th-EtOHcc showed a significant gastroprotective effect at doses of 1, 10 and 50 mg / kg, reducing the lesion area by 72%, 86% and 84%, respectively. In the model of ischemia and reperfusion, Th-EtOHcc showed a gastroprotective effect at 10 and 50 mg / kg, reducing the lesion area by 96% and 61%, respectively. Th-EtOHcc was able to significantly reduce the proinflammatory cytokines TNF-α and IL-1β in the injury model induced by ischemia and reperfusion, as well as, it was also able to preserve mucus levels in the pylorus ligature model. The present work shows evidence of the its gastroprotective effect on the gastric injury induced by absolute ethanol and ischemia and reperfusion by maintain mucosal integrity. as well as by the preservation of the mucus barrier evidenced in the pylorus ligature model. **Keywords**: Ulcer. Gastroprotection.*Tocoyena hispidula* Standl. **Financial Support**: PPGFARM/UFPI/CAPES.

09.043 Bioactive Fraction of *Eugenia selloi* (**Pitangatuba**), **a Brazilian native superfruit**, **decrease the inflammatory process by suppress the NF-κB activation**. Lazarini JG[1], Soares JC[2], Franchin M[1], Nani BD[1], Massarioli AP[2], Alencar SM[2], Rosalen PL[1] [1]Unicamp, [2]USP

Introduction: The Brazilian Atlantic rainforest (threatened by deforestation) is one of the richest places in biodiversity hosting a large number of native fruit species. These Brazilian native fruits (BNF) species, classified as a superfruit due to their rich phytochemical composition as polyphenols, may decrease the release of inflammatory precursors as the nuclear factor kappa B (NF-κB), cytokine and also interfere with novel therapeutics targets on inflammation (Sousa et al., 2017). Thus, we evaluated the polyphenolic composition, toxicological profile and the anti-inflammatory mechanism of action of the best fruit species and its bioactive fraction in a bioguided study with Brazilian native fruits. **Methods:** Eleven BNF ethanolic extracts (80: 20,v/v) were submitted to evaluation of anti-inflammatory activity by neutrophil migration in mice (Research Ethical Committee #4371-1, C57BL/6,n=6) and NF-κBactivation assay in RAW 264.7 macrophages. We selected one BNF that exhibited the best anti-inflammatory activity and we carried out its chemical fractionation. To the best BNF and its bioactive fractionwe determined the poliphenolic profile by LC–ESI-QTOF-MS; neutrophil migration; tumor necrosis factor alpha (TNF-α) and chemokine (CXCL2/MIP-2) levels;NF-κB activation and *Galleria mellonella* larvae *in vivo* toxicity. **Results**: At the total eleven BNF, the *Eugenia selloi*(*Es*or common name: Pitangatuba)was selected due to its biological activity (anti-inflammatory). *E s*and its bioactive fraction (F3) showed flavonoids, ellagitanins, acid hidroxinamics and derivates in their composition. During the biological assays, *Es* and F3 decreased significantly the neutrophil migration and levels of TNF-α e CXCL2/MIP-2*in vivo*as well. The F3 was three times more potent than *Es.* Besides, both treatments reduced the NF-κB activation compared to the control ($p<0.05$) and did not produced toxic effects *on G. mellonella* larvae**. Conclusion:** Es and its F3 are promising source of bioactive polyphenolic compounds with low toxicity and anti-inflammatory potential decreasing NF-κB pathway activation and consequently reducing cytokines levels and neutrophil migration. *Es*may became a functional food controlling the inflammatory process and therefore, it has been classified as a superfruit. **Reference:** Sousa JA et al. Environ Monit Assess. (3),129, 2017. **Acknowledgments:** We are thankful to Helton J. Teodoro Muniz from “Frutas Raras” Farm for providing the samples. **Financial support:** FAPESP N° 2016/02926-6; 2017/09898-0

09.044 Effects of *Euterpe oleracea* **Mart**. (**Acai**) **Extract on hepatic steatosis associated to obesity**: **Role of the Renin-Angiotensin System**. Romão MH, Bem GF, Santos IBS, Soares RA, Ognibene D, Costa CA, Resende AC UERJ

Introduction: Previous studies have shown that the açaí seed extract (ASE) prevents the obesity hypertension, dyslipidemia, weight gain and hyperglycemia in high fat diet-fed mice. ASE also demonstrated the ability to modulate RAS components, reducing plasma renin levels in an experimental model of renovascular hypertension. The aim of this study was to evaluate and compare the effects of ASE and enalapril (ENA)on obesity and hepatic related alterations in C57BL/6 mice fed a high fat diet (HFD). **Methods:** All experimental protocols were approved by the Ethics Committee for the Care and Use of Animals Experiences of the Institute of Biology Roberto Alcântara Gomes (CEUA/034/2015). 30-day old male C57BL / 6 mice were separated into five groups: Control (diet 10% lipids); HF (60% lipid diet); HF + ASE (300 mg / kg-1) and HF + ENA (30 mg / kg-1). The diet was administered concomitantly with these treatments, which were performed by intragastric gavage for 12 weeks. Body mass and glycemia were evaluated during the treatment period. At the end of treatment and after euthanasia, liver weight, visceral adipose tissue weight, Lee index, caloric intake, liver lipid profile, hepatic steatosis and collagen deposition, antioxidant enzyme activity and oxidative damage in liver homogenate were evaluated. In addition, the protein expression of the components of the RAS was evaluated by western blotting in liver homogenate. **Results:** In the HF group there was an increase in body weight and blood glucose, changes that were prevented by the treatment with ASE and ENA. The HF group also showed an increase in visceral adipose tissue weight, caloric intake and Lee's index. Treatment with ASE prevented the increase of adipose tissue weight and Lee's index, and ENA prevented all these parameters. ASE and ENA prevented the increase of hepatic levels of cholesterol and triglycerides, as well as, the increase in liver weight, steatosis and collagen deposition. Both treatments prevented the reduction of the antioxidant activity observed in the HF group. The HF group showed increased hepatic expression of renin and AT1 receptor, and both treatments prevented the increased expression of rennin. ASEandENA increased the expression of ECA-2 and Mas receptor**. Conclusion:** These results indicate that the ASE prevented the deleterious effects of the HF diet on the liver. The beneficial effects of ASE involve the antioxidant effect and also the modulation of RAS, and it had a comparable effect with ENA. This study opened a possibility for oral administration of ASE in the treatment obesity-associated hepatic steatosis.

Financial Support: FAPERJ and CNPq

09.045 Antagonist of *Apis mellifera* **activities by** *Eclipta prostrata* **extract and its constituents**. Souza PDN[1], Rocha Júnior JRS[1], Pinheiro AN[1], Cesar MOC[1], Monteiro-Machado M[1], Strauch MA[1], Ponte CG[2], Patrão-Neto FC[1], Melo PA[1] [1]UFRJ, [2]IFRJ

Introduction: Africanized honeybees (*Apis mellifera*) attacks are the cause of serious accidents in humans and animals. Clinical features include rhabdomyolysis, cardiac, respiratory and renal failure. *A. mellifera* venom has a complex composition containing proteins, peptides, amines and cytotoxic substances. Currently, experimental treatment with heterologous serum against bee sting (clinical trials, phase I / II) is in use, however the research with substances that are able to neutralize bee venom is still important. With this aim and based on previous results with snake venoms, our research group developed a study using the crude extract of the plant *Eclipta prostrata* (EP) and the natural substance found in it: coumestan called wedelolactone (WED). **Methods:** We investigated the antagonism of EP and WED in different experimental models *in vitro*, such as phospholipase A_2 (PLA_2) activity, hyaluronidase activity and myotoxicity. In the study of PLA_2 activity the venom of *A. mellifera* (1 µg/mL) was preincubated with EP or WED (3 - 100 µM) for 30 min at 37 °C. The venom hyaluronidase activity (10 µg/ml) was observed in presence of 10 – 150 µM of WED. In the myotoxicity study were used *Extensor digitorum longus* muscles (EDL) isolated from Swiss mice (25 -30 g, protocol CEUA UFRJ n ° DFBCICB072-04/16) and the myotoxic activity of the venom alone (10 - 25 µg/mL) and in the presence of WED (1 - 10 µM) was evaluated by the releasing rate of the sarcoplasmic enzyme, creatinocinase (CK), in $U.g^{-1}.h^{-1}$. **Results:** Both the crude extract and the isolated substance completely inhibited the venom PLA_2 activity in a concentration-dependent manner. The venom hyaluronidase activity was also inhibited in a concentration-dependent way in the presence of EP or WED. The EDL muscles were perfused for 90 minutes with a physiological saline solution, renewed every 30 minutes, containing the crude venom of *A. mellifera* which increased the basal CK release rate of 0.78 ± 0.1 $U.g^{-1}.h^{-1}$ for 9.82 ± 1.5 $U.g^{-1}.h^{-1}$ at 60 min, about 12.5 times the baseline. In addition, 10 µM of WED reduces the venom induced CK release rate by about 97%. **Conclusion:** Our data suggests that EP crude extract has the ability to antagonize some of the bee venoms enzyme effects, and that WED should be further studied, at least, as partially responsible for that ability. **Financial Support**: CAPES, *FAPERJ and CNPq.* References: MELO, P.A. Ability of wedelolactone, heparin and parabromophenacyl bromide to antagonize the myotoxic effects of two crotaline venoms and their PLA2 myotoxins. Toxicon, [s.l.], v. 37, p. 199 – 215, 1999.

09.046 Effect of the mixture of Triterpenes alpha, beta-amyrin in the prevention of non-alcoholic fatty disease in mice. Lima RP[1], Nunes PIG[1], Viana AFSC[1], Oliveira FTB[1], Silva RAC[1], Freire GP[1], Silva AVL[1], Moreira TS[1], Carvalho AA[2], Chaves MH[2], Santos FA[1] [1]UFC, [2]UFPI

Introduction: Non-alcoholic fatty liver disease (NAFLD) is a pathological-clinical disease defined by the abnormal accumulation of triglycerides in the liver. As a result of the increase in its incidence and the limited number of drugs for its treatment, new therapies are sought for the treatment of NAFLD.This study investigated the preventive effect of the mixture of alpha, beta-amyrin triterpenes (AMY), isolated from *Protium heptaphyllum*, in NALFD induced by high-fat diet (HFD) in mice, since an earlier study showed that AMY is able to improve resistance to insulin and hepatic histology in an obesity model induced by HFD. **Methods:** Male mice (n=10/group) were maintained on a 12 h light-dark cycle in a temperature controlled room (23±1 °C) and divided into five groups: Vehicle (2% Tween 80) + standard diet (SD), HFD, AMY 10 mg/kg + HFD, AMY 20 mg/kg + HFD and fenofibrate (FEN) 50 mg/ kg + HFD. The SD consisted of the standard ration for mice obtained from a commercial source (Nuvilab®, Brazil), while the HFD was prepared according to Estadela et al., 2004. The animals were treated for 15 weeks and at the end of the experiment they were weighed. Serum was collected for quantification of serum lipids and the liver for lipid quantification, protein expression of AMPK and SREBP1 and gene expression of FAS, ACC1 and CD36.The species was registered at the Chico Mendes Institute for Biodiversity Conservation (ICMBio) under nº A4B5E59. The experimental protocols were approved by CEUA/UFC (nº 5347120318). Results were expressed as mean ± SEM. For multiple comparison of parametric data, ANOVA followed by the Student Newman-Keuls test was used. Values of $p<0.05$ were considered statistically significant. **Results:** HFD increased the weight of the animals (57.22 ± 1.44g) and the liver weight (507.20 ± 14.05 mg/10 g) when compared to SD (46.22 ± 0.72g and 427.5 ± 11.03 mg/10g, respectively). AMY 10 and 20 mg/kg and FENO 50 mg/kg significantly reduced the weight of the animals in 16.3%, 14.1% and 18.2%, as well as the liver weight in 28.4%, 27.1 % and 18%, respectively. HFD increased the serum and hepatic concentrations of total cholesterol (144.3 ± 5.44 mg/dL, 144.3 ± 5.44 mg/g) and triglycerides (93.50 ± 7.88 mg/dL, 34 ± 0.06 mg/g) when compared to SD (95.44 ± 3.73 mg/dL; 75.75 ± 1.52 mg/dL). AMY 10 and 20 mg/kg and FENO 50 mg/kg significantly reduced serum and hepatic total cholesterol and triglyceride levels. HFD decreased hepatic AMPK expression and increased the expression of SREBP1, in addition to increasing the mRNA expression of FAS, ACC1 and CD36 genes in relation to SD. Treatments with AMY 10 and 20 mg/kg and FEN 50 mg/kg reduced protein hepatic expression of SREBP1 in 0.38, 0.55 and 0.58 times, while increasing AMPK protein expression in 5.99, 8.77 and 10.1 times, respectively, concomitant with the reduction ofgene expression of ACC1, FAS and CD36. **Conclusion:** The results demonstrate a potential hepatoprotective effect of AMY on the development of NAFLD.

Financial Support information: CAPES; CNPq e FUNCAP

Reference: ESTADELLA, D *et al.* **Nutrit.** v. 20, p218, 2004.

09.047 Brazilian Red Propolis - HPLC Characterization and Perspectives for Use In Periodontal Diseases. Alves AKS, Silva IMA, Nascimento TG, Penteado LAM, Porto ICCM UFAL

Introduction: Propolis is a “bee glue” made by honeybees with functions in the hive that includes sealing cracks, prevent invasion of predators and the proliferation of fungi and bacteria. Propolis has shown a lot of applications in treating diseases due to its antiseptic, anti-inflammatory, antioxidant, antibacterial, antifungal, antiulcer, anticancer, and immunomodulatory properties. Brazilian Red Propolis (BRP) is a type of propolis produced by bees *Apis mellifera* with the sap of *Dalbergia ecastophyllum*, a leguminous plant native in northeastern of Brazil. The main secondary metabolites present in BRP include isoflavonoids, propolones/guttiferones, terpenes, chalcones, and phenolic compounds, some of them never found before in propolis from other sources. Periodontitis is one of the most world-spread inflammatory diseases, distinguished by periodontal pocket formation, clinical attachment loss, and alveolar bone resorption. The adjunctive use of anti-inflammatory agents can improve the therapeutic response and slow the progression of inflammatory disorders of periodontitis. The aim of this study was to carry out a High-Performance Liquid Chromatography (HPLC) analysis on an Ethanolic Extract of Brazilian Red Propolis (EEBRP) sample in search of substances of interest for the treatment of periodontal diseases. **Methods:** BRP raw material was collected from Marechal Deodoro, Alagoas, Brazil, during the month of July/2016. It was performed an ethanolic extraction of the brute sample and a HPLC analysis of the Ethanolic Extract of Brazilian Red Propolis (EEBRP). The corresponding retention times and peak purity at the maximum wavelengths were determined and compared with the analytical standards of flavonoids. RESULTS The chromatograms obtained using HPLC analysis for the EEBRP showed a significant presence of flavonoids of interest for treating periodontal diseases. The biologic markers daidzein (1.4 µg/mL), liquiritigenin (3.0 µg/mL), pinobanksin (0.4 µg/mL), isoliquiritigenin (4.2 µg/mL), formononetin (5.0 µg/mL), pinocembrin (0.4 µg/mL), and biochanin A (0.1 µg/mL) were identified and quantified using the HPLC profile of the EEBRP. **Conclusion:** The flavonoid profile resulting from HPLC analysis suggests that using Red Propolis preparations as an adjuvant in the treatment of periodontal diseases may be of interest, since these flavonoids, at the obtained levels, positively affect several periodontal cells, including epithelial gingival fibroblasts, periodontal ligament cells, and osteoclasts, reducing inflammatory pathways activation and alveolar bone loss.

09.048 Mechanistic clues of cardioprotective actions induced by hydroalcoholic extract from leaves of *Alpinia zerumbet* **on myocardial infarction in rats**. Bernardino AC, Paulino ET, Silva JCG, Rodrigues AKBF, Oliveira KRV, Machado MLDP, Vieira SP, Oliveira WS, Santos JCC, Araújo Júnior JX, Ribeiro EAN UFAL

Introduction: *Alpinia zerumbet* (Zingiberaceae) have been used in folk medicine because of its antihypertensive and diuretic properties (Cartaxo et al., 2010). Several cardiovascular actions have been reported, such as hypotensive, vasorelaxant and antihypertensive effects, antioxidant properties, antiplatelet activities, and cardio-depressive effect (Chan et al., 2017). A recent study from our group demonstrated that the hydroalcoholic extract from leaves of *A. zerumbet (AZE)* exhibited cardioprotective activity in infarcted rats (Tenório et al., 2019). This study aimed to investigate the mechanisms involved in the cardioprotective effect induced by AZE in rats. **Methods:** In this study, we utilized isoproterenol (ISO, 85 mg/kg, s.c.) for inducing MI in rats. The rats were anesthetized, and polyethylene catheters were inserted into the lower abdominal aorta and the inferior vena cava for blood pressure measurements and administration of drugs, respectively. The hemodynamic parameters evaluated were mean arterial pressure (MAP), pressure rate index (PRI), and heart rate (HR). The level of calcium in the aortas, ventricles, and serum was quantified with a colorimetric assay. The antioxidant effect of the AZE was evaluated in chemical tests by scavengers oxidant species activity (DPPH, ABTS, NO. reactive species, reducing Fe3+ powder, chelating Fe2+powder). The results were expressed as media±S.E.M and statistically analyzed by ANOVA followed Newman-Keuls. The study was approved by the ethics committee of the Federal University of Alagoas (Nº 010852/2009-01). **Results:** In control rats (not infarcted), AZE (0.1 to 60 mg/kg, i.v., randomly) produced hypotension and bradycardia. In infarcted rats. The hypotensive and bradycardic effects induced by the AZE were similar to the control rats. The bradycardic response to AZE was significantly attenuated after nifedipine (1 mg/kg, i.v., calcium channel blocker) in infarcted rats. Rats treated with ISO showed a significant increase in the HR (317±3 bpm), in the PRI (38±3 mmHg/min) and decreases in MAP (81±5 mmHg). Pre-treatment with AZE 300 mg/kg/day (PO) for 26 days provided significant protection from ISO-induced changes in HR (253±8 bpm) and PRI (18±2 mmHg/min) as compared to ISO. Additionally, the AZE significantly reduced calcium levels in both the ventricles and aortas, without a change in serum. AZE (0.5 to15 mg/mL) showed an antioxidant effect when compared with natural antioxidant products [ABTS•+: AZE, IC50 % = 196.5 *vs.* Quecertin, IC50% = 462.1; Caffeic acid, IC50% = 418.2 and Gallic acid, IC50% = 546.4). Scavengers activity NO .by Griess reaction, AZE (250 mg/mL) induced time-dependent antioxidant effects (Imáx= 60 % *vs.* Quecertin: Imáx= 63%; Caffeic acid: Imáx= 75% and Gallic acid: Imáx= 50% on 150 minutes). However, the same effect was not observed in the DPPH• and fluorescence recovery after photobleaching methods. **Conclusions:** These results suggest that the cardioprotective effect of the AZE is probably due to a blockage of voltage-operated calcium channels (VOCC´S), at least partly also to the antioxidant effect. Keywords: *Alpinia zerumbet*; Cardioprotection; Rats; VOCC´S; Antioxidant **Financial Support**: CNPq, CAPES and PPSUS/FAPEAL. **References**: CHAN, E.W.C. et al. Pharm. Sci. v. 26 (11), p 775–788. 2017. CARTAXO, SL. et al. J Ethnopharmacol, v. 131, p 326-342. 2010. PAULINO, E.T. et al. J Ethnopharmacol. v. 242, p 112037. 2019

09.049 Antioxidant potential of *Maclura tinctoria* **heartwood extract using Rhamdia quelen experimentally infected with** *Aeromonas hydrophila*. Rodrigues P[1], Pires LC[1], Souza CF[1], Coldebella R[1], Garlet QI[2], Pedrazzi C[1], Baldisserotto B[1], Heinzmann BM[1] [1]UFSM, [2]FURG

Introduction: Microbiological control in aquaculture proceeding is a relevant concern,since bacterial contamination of fish and fish products goes to humans through feeding. *Aeromonas hydrophila* are Gram-negative bacteria linked to fish infection and, under debilitating conditions, can infect humans(NEMEC, A. Int J Syst Evolut Microbiol, 65: 934, 2015; JOH, S.J.Vet Microbiol, 163: 190, 2013).Natural products, such as plant extracts, are target for studies of new drugs with antibiotic properties that can bypass the microbial resistance. *Maclura tinctoria* is a tree species rich in phenolic compounds and *in vitro* assays evidenced antibacterial activity of its extracts against *A. hydrophila* (PIRES, Federal university of Santa Maria, 2018). Therefore, we aiming to verify the *in vivo* antioxidant potential of *M. tinctorial* heartwood extract (HE), using *R. quelen* experimentally infected with *A. hydrophila*. **Methods:** *Maclura tinctorial* heartwood were collected in Porto Mauá, RS, Brazil. The extraction of the ground plant material was performed by soxhlet with ethanol (BRAZILIAN PHARMACOPOEIA, 5th. ed., 2010).*R. quelen* were divided into two groups: infected and non-infected (control group). Infected animals received an intramuscular injection of 60 µL of inoculum (*A. hydrophila*1.5 x 10^9 CFU; 1.2 OD 600 nm), and untreated fish received sterile saline solution on the right latero-dorsal side (Ethics process 5307210617). Florfenicol (FO) was used as positive control. The fish liver was used for the antioxidant assay by determining protein concentration, carbonyl (CP) groups and lipid peroxidation (TBARS). **Results:** Infected and untreated fishes exhibit an increase ofCP. The PC are generated due to proteins oxidation, and is commonly increased in inflammatory processes, which corroborates with the infection generated by bacteria inoculation in the fish (DALLE-DONNE, ClinChim. 329: 38, 2003). Furthermore, the HE treatment induced the reduction of inflammation by the reduction of CP, although, lipoperoxidation was also observed due to TBARS increase. **Conclusion**: The HE caused a reduction in the inflammation generated by *A. hydrophila* infection. However, more studies are needed to verify the toxicity of this extract. **Financial Support:** FAPERGS; CNPq and CAPES.

09.050 Effect of essential oil of *Alpinia zerumbet* **on vascular reactivity of isolated rat resistance arteries**. Rocha DG, Holanda TM, Silveira JAM, Maia PHF, Moraes MEA, Fechine-Jamacaru FV, Moraes Filho MO UFC

Introduction: *Alpinia zerumbet* is a plant from Zingiberaceae family, popularly known in Brazil as "Colônia" which is used for anxiety and systemic arterial hypertension treatment (Matos, 2002). Several studies have already demonstrated its anti-hypertensive, vasodilator and antioxidant activities, among others (Cavalcanti et al., 2012; Cunha et al., 2013), but no research aimed to verify the vasodilator effect of Alpinia zerumbet's essential oil(AzEO) in resistance vessels. Thus, the aim of this study was to evaluate the effect of AzEO and to characterize its mechanism in mesenteric small arteries isolated from Wistar rats. **Methods:** The experimental protocol was approved by animal research ethical committee from the Federal University of Ceará (CEUA-UFC) under protocol 103/2017.The rats were anesthetized with ketamine (80 mg/kg) and xylazine (10 mg/kg), that after an abdominal incision, the whole intestine with the mesenteric bed was extract and put into a petri dish with krebs solution, where the second-order branch from mesenteric artery was dissected and mounted in a wire myograph. The effect of AzEO (3 to 3,000 µg/mL) was verified by isometric tension, which was measured in the mesenteric artery second-order rings (MASOR) with intact endothelium pre-contracted by KCl (80mM) or U-46619 (a thromboxane A2 analogue) (3 µM).To study the mechanism, it was evaluated the influence of endothelium and several inhibitors (TEA, 4-AP, Glibenclamide, Atropine, L-NAME, ODQ and indomethacin) on vasodilator effect of AzEO in MASOR pre-contracted by U-46619. Some protocols were also performed targeting the Ca^{2+} influx, through $CaCl_2$ contraction in high K^+ solution, as well as Ca^{2+} release from intracellular storages by caffeine and phenylephrine induced contraction in Ca^{2+} free solution. **Results:** The results showed an endothelium-independent vasorelaxant effect of AzEO on MASOR pre-contracted withKCl, showing an EC_{50} of 33.17 µg/mL (CI95%: 28.11 to 39.38), and U-46619, with an EC_{50} of 21.52 µg/mL (CI95%: 17.68 to 25.95). Significantly higher potency (P<0.01) was observed for MASOR pre-contracted with U-46619, when compared to those pre-contracted withKCl. Regarding the inhibitors, only ODQ and L-NAME produced significant alteration on EC_{50} when compared to Control, with values of 39.47 µg/mL (CI95%: 36.7 to 42.44; P<0.001), and 35.15 µg/mL (CI95%: 33.41 to 37.03), respectively. However, the inhibitors did not cause an E_{max} reduction. Concerning the calcium assays, a reduction on muscle contraction caused by incubation with AzEO was observed in all three protocols in a dose-dependent way. **Conclusion:** Our results suggest that Alpinia zerumbet's essential oil causes a vasodilator effect, mediated by inhibition of Ca^{2+} influx and Ca^{2+} release from intracellular storages, as well as an activation of NOS/GCs pathway. **Financial Support:** CAPES and CNPq. **References:** MATOS, F.J.A. Farmácias vivas: sistema de utilização de plantas medicinais projetado para pequenas comunidades. 4. ed. Fortaleza: Editora UFC, 2002. 267p. CAVALCANTI, B. C. *et al*. Food and Chemical Toxicology, v. 50, n. 11, p. 4051–4061, 2012. CUNHA, G. H. *et al*. Vascular Pharmacology, v. 58, n. 5–6, p. 337–345, 2013.

09.051 Braylin-induced relaxant effect in the corpus cavernosum involves NO/sGC pathway. Araújo FA[1], Jesus RLC[2], Costa RS[2], Souza Filho OP[2], Velozo ES[2], Vasconcelos DFSA[2] [1]CPqGM-Fiocruz, [2]UFBA

Introduction: Erectile dysfunction (ED) is defined as the recurrent and persistent inability to achieve or maintain satisfactory penile erection. In the world, it is estimated that approximately 52% of men between 40 and 70 years old are affected. In addition, clinical studies have provided robust data that ED is a sentinel symptom in patients with occult vascular diseases, in particular cardiovascular disease (CVD), and ED is frequently encountered in patients with arterial hypertension. Due a low pharmacological response to phosphodiesterase type 5 (PDE-5) inhibitors in patients with vascular endothelial damage, as well as several cardiac side effects to these drugs, the search for new drugs and therapeutic targets is of paramount importance to ED treatment. Thus, natural products have served as an important source of drug for centuries. In previous studies conducted by our research group, we have demonstrated that the coumarin Braylin (BRA) induced vasodilation in iliac artery. The aim of this study was to investigate the mechanism of action involved in the relaxing effect of BRA on the corpus cavernosum isolated from rats. **Method:** All experimental protocols were approved by CEUA-ICS/UFBA (130/2017). Spontaneously hypertensive male rats (SHR, n=6) and their normotensive Wistar controls (n=5), both 11-15 weeks, were euthanized in CO_2 chamber and the penis was removed. Then, the corpora cavernosa (CC) were kept in an organ bath with Krebs-bicarbonate solution at 37°C and aerated with a carbogenic mixture (95%O_2 and 5%CO_2) and connected to a force transducer. **Results**: BRA (10^{-5}M-10^{-4}M) was able to promote concentration-dependent relaxation in CC pre-contracted with phenylephrine Phe 10^{-5}M ($E_{3x10\text{-}4M}$: 115.1±8.7, n=5). Additionally, no change was observed in baseline tone after BRA exposure or reduction in the ability of phe-induced contraction. In CC pre-contracted with KCl 80 mM-tyrode solution, BRA also induced relaxation, ($E_{3x10\text{-}4M}$: 117.2±5.0, n=5). In the presence of L-NAME (10^{-4}M), inhibitor of nitric oxide synthase (NOS), the relaxant effect induced by BRAwas reduced ($E_{3x10\text{-}5M}$: 59.3±7.5, n=5; 38.2±4.0, n=5, absence and presence of L-NAME, respectively). Similar results were observed in the presence of ODQ (10^{-5}M), an inhibitor of soluble guanylyl cyclase (sGC),In addition, the relaxation promoted by SNP (a nitric oxide donating agent) was improved in the presence of BRA ($E_{10\text{-}4M}$: 61.7±7.6, n=5; 89.8±9.0, n=5, absence and presence of BRA, respectively).Furthermore, BRA induced the same relaxation effect in the CC of SHR, thatis a well-stablished model of ED associated with hypertension. **Conclusion:** In summary, our data provide strong support that BRA induced relaxation involving NO/sGC pathway and itwas able to promote relaxation effect in CC from animals with hypertension-associated ED. Then, BRA could be a potential molecule for the treatment of ED. **Financial support:** CAPES, CNPq, FAPESB, UFBA.

09.052 Study of the yield and evaluation of the acute toxicity of the essential oil of *Piper marginatum* **Jacq in mice**. Lopes DCC, Pereira KDS, Sousa KTS, Castro KCF, Moraes TMP, Moraes WP, Lopes JMC, Moraes JC Ufopa

Introduction: The family Piperaceae is a family of herbs, shrubs, small trees, aromatic trees and creepers, represented by three genus: Piper, Peperoma, and zippelia, comprising approximately 4000 species. The Piper marginatum belongs to the Piperaceae family and is considered one of the largest angiosperms, with pantropical distribution and diversity located in Central and South America. Most plants have some toxicity at a certain dosage, which can be through contact, inhalation or ingestion, and can cause damage to health, both for humans and animals, and may even lead to death. **Methods:** The leaves of *P. marginatum* Jacq were collected at the Federal University of the West of Pará (coordinates 02 ° 25'04.7 "South and 054 ° 44'27.8" West), Tapajós Campus, from September 2018 to April 2019. The species used in this study was botanically identified and their exsicata were deposited in the Federal University of the West of Pará Herbarium (UFOPA) under the number HSTM-00370. The leaves were oven dried at 40øC for 4 days, then ground in an analytical mill and weighed to yield 300 g, 300 g, and 293 g of dry sample. The essential oil of *P. marginatum* Jacq was obtained from the Laboratory of Research and Development of Bioactive Products (P & DBIO) of the Institute of Biodiversity and Forests of UFOPA, using the hydrodestilation method using the Clevenger type apparatus for 4 hours each. Twelve female Swiss mice were used for acute toxicity, 6-8 weeks old, of the animal house at the University of Pará University Hospital (UEPA). Animals received water and diet ad libitum, kept under controlled light 12h light / dark and maintained at a temperature of 23 ± 2º C). Experimental groups were formed (n = 3), animals received the essential oil of *P. marginatum* Jacq diluted in 15% Ethanol P.A. and Tween 80 at 0.312% delivered in 0.9% Nacl orally at the dose of 2000 mg / kg body weight and the control group received only 0.9% saline solution, in accordance with the recommendations established by OECD-423/2001. This project was submitted to the Ethics Committee on the use of animals of UFOPA - CEUA / UFOPA was approved under protocol No. 10006-2017. **Results:** The essential oils extracted by hydrodistillation for 4 hours presented a mean yield of 0.8% with typical odor and beige coloration. Obtained from each extraction were 1.54 g, 2.11 g and 3.58 g of oil in yields of 0.51%, 0.70% and 1.22%, respectively. During the evaluation of acute toxicity, the animals were observed individually at least once every 30 minutes in the first four hours, periodically for the first 24 hours, and daily for 14 days. Conclusion The animals showed no signs or clinical signs of toxicity, such as tremors, convulsions, salivation, diarrhea, lethargy, alteration of skin and hair color, classifying the species as low toxicity according to OECD-423/2001 protocol. Acknowledgments UFOPA, UEPA, LABFAR, LaBP&DBIO.

09.053 Therapeutic potential of a physalin-rich *Physalis angulata* extract in a mouse model of periodontal disease. Lauria PSS[1], Vieceli PS[1], Juiz PJL[2], Pereira RR[1], Couto RDC[1], Nogueira RC[3], Tomassini TCB[4], Ribeiro IM[4], Soares MBP[3], Villarreal CF[1] [1]UFBA, [2]UFRB, [3]CPqGM-Fiocruz, [4]Fiocruz

Introduction: Periodontal disease (PD) is an umbrella term comprising many inflammatory disorders often associated with infectious component. PD causes degeneration of connective tissues supporting teeth leading to teeth loss. Regulating the immuno-inflammatory response to PD might improve the clinical results of the traditional periodontal treatments. *Physalis angulata* extracts (PAE) have been shown to promote consistent anti-inflammatory and immunomodulatory properties in preclinical trials, which are associated with its physalins constituents. This study aimed to investigate the therapeutic potential of a standardized ethanolic PAE rich in physalins in a mice model of PD. **Methods:** Male C57Bl/6 mice (23-26 g) were submitted to a PD-induction protocol consisting of 12 administration of LPS (12 µg/1µL) into the interdental papilla in the course of28 days. Starting from the 15th day after the first LPS injection, the mice were orally treated with daily saline, PAE (50 or 100 mg/kg) or nimesulide for 14 days. At the end of the experimental period, alveolar bone loss was evaluated along with the gingival expression of biomarkers of PD such as cytokines, MMP-9 and TIMP-1 by ELISA and Real Time PCR. Hematological and biochemical parameters were also evaluated. Comparisons between groups were made using one-way ANOVA followed by Tukey's test. **Results:** PD-induced mice suffered an important alveolar bone loss that was prevented in the mice treated with PAE (50 or 100 mg/kg). The treatment with PAE reduced the expression of mRNA of MMP-9 (76%; $p < 0.05$), but not of TIMP-1.As shown by both mRNA expression levels and quantifications by ELISA, PAE also reduced the production of the inflammatory cytokines IL-1β(98% and 94%, $p < 0.05$) and IL-6 (68% and 97%; $p < 0.05$)while increasing the production of the anti-inflammatory cytokine TGF-β(294% and 193%; $p < 0.05$).No abnormality was found in mice treated with PAE in the hematological or biochemical evaluations**. Conclusion:** In experimental conditions, PAE exhibited a disease-modifying effect along with unidentifiable systemic toxicity, which is a good profile for new drugs candidates. The mechanisms of the protective actions of PAE on DP remain objects of further investigation. **Financial Support**: FAPESB and CAPES.

09.054 Antioxidant activity-mediated neuroprotective effects of the novel ocellatins, a class of peptides from the skin secretion of the South American frog, *Leptodactylus vastus*. Sousa NA[1], Oliveira GAL[1], Oliveira AP[1], Lopes ALF[1], Iles B[1], Araújo AR[1], Araújo TSLA[1], Nogueira KM[2], Placido A[3], Portugal C[3], Socodato R[3], Relvas J[3], Eaton P[3], Leite JRSA[4], Medeiros JVR[1] [1]UFPI, [2]UFC, [3]Universidade de Lisboa, [4]UnB

Introduction: Cutaneous secretions of amphibians have bioactive compounds, such as peptides, with a potential for pharmacological applications. Therefore, this study aimed to isolate and determine the primary structure as well as investigate peptides obtained from the cutaneous secretions of the amphibian, *Leptodactylus vastus*, as a source of bioactive molecules. **Methods:** *L. vastus* species were collected on the Ilha Grande of Santa Izabel, Ilha Grande city, Piaui state, Brazil, under the license number, 61838-1 SISBIO/ICMBio. The cutaneous secretion was extracted with a small electrical stimulation. The lyophilized total extract was made RP-HPLC and the bioactive peptides were identified by MALDI TOF-TOF and then synthesized by solid phase chemistry of them-f type. Peptides were screened for antibacterial activity against strains *Escherichia coli* ATCC 25922 and *Staphylococcus aureus* ATCC 25923. In addition, *in vivo* antioxidant potential in the mice hippocampus with determination of malondialdehyde (MDA), glutathione (GSH), nitrite, and superoxide dismutase (SOD) levels was evaluated .The experiments were previously submitted to approval of the Ethics Committee on Animal Experimentation (protocol no. 001/2019).The peptides were tested in impairing lipopolysaccharide (LPS)-induced reactive oxygen species (ROS) formation and NF-kB activation in living microglia. Hippocampal neurons were incubated with microglial conditioned media treated with LPS and LPS in the presence of peptides. Furthermore, the hemolytic activity these peptideswas tested using human red blood cells. **Results:** The obtained peptides possessed the amino acid sequences, GVVDILKGAAKDLAGHand GVVDILKGAAKDLAGHLASKV, with monoisotopic masses of $[M + H]^{\pm}$= 1563.8 Da and $[M + H]^{\pm}$= 2062.4 Da, respectively. From the primary sequences of the peptides analyzed, the molecules were characterized as being peptides of the class of ocellatins and were named as Ocellatin-K1(1-16) and Ocellatin-K1(1-21).Functional analysis revealed that Ocellatin-K1(1-16) and Ocellatin-K1 (1-21) had no significant antibacterial effects. However, treatment of mice with these ocellatins *in vivo* reduced the nitrite contentand MDA formation. Moreover, SOD relative enzymatic activity and GSH concentration were increased in the hippocampus of mice. In addition, Ocellatin-K1 (1-16) and Ocellatin-K1 (1-21) were effective in impairing LPS-induced ROS formation and NF-kB activation in living microglia. Both peptides reduced the oxidative stress elicited in hippocampal neurons. Furthermore, these ocellatins demonstrated low cytotoxicity towards erythrocytes. **Conclusion:** These observations along with the functional properties of these peptides suggest possible to neuromodulatory therapeutic applications. **Financial Support**: His study was funded with financial support from FCT/MEC through national funds and co-financed by FEDER, under the Partnership Agreement PT 2020.

09.055 Larvicida and antioxidant activities of semi-purified samples of *Eplingiella fruticosa* **Salzm. Ex. Bent leaves**. Souza JD[1], Shan AYKV[2], Graça AS[1], Moraes SZC[1], Almeida SM[1], Mota DCS[1], Lima MRF[2], Santana AEG[2], Araújo SMS[1], Mota KO[2], Santos A[1], Araújo BSA[1], Souza SBS[3], Estevam CDS[1] [1]UFS, [2]UFAL, [3]Unit

Introduction: Secondary metabolites contribute to the defense and survival of plants and are of therapeutic importance in the treatment of numerous diseases. They may also contribute to the prevention of arboviruses by being toxic to certain insect vectors such as *Aedesa egypti*. *Eplingiella fruticosa* (Lamiaceae) or Alecrim do campo is a medicinal plant found in the state of Sergipe with widespread use in the fight against pain. In the literature its potential is well established: anti-inflammatory, antioxidant and antinociceptive. Showing evidence of larvicidal activity. Natural products represent an excellent library of bioactive molecules that can act synergistically or not. The aim of this study was to evaluate the larvicidal and antioxidant activity of semipurified (ASP) samples of the chloroform extract (CE) of the leaves of *E. fruticosa*. **Methods:** The dried leaves of *E. fruticosa* were reduced to powder, and their constituents were extracted with chloroform for 10 days. The CE obtained was semi-purified by means of flash chromatography and classical liquid chromatography, obtaining 29 semi-isolated. The antioxidant activity of ASP was evaluated by the free radical sequestration method 2,2-diphenyl-1-picrylhydrazyl, according to Cheng et al. (J. Agric. FoodChem. v. 54, p. 7429, 2006).The effective concentration of 50% (EC_{50}) and the antioxidant activity index (AAI) of the bioactive and control (trolox) samples were calculated. Statistical analysis was performed by the ANOVA test, followed by Tukey posttest, Differences were considered significant with $p < 0.05$. The larvicidal bioassays against *Aedesa egypti* were performed with 3rd instar larvae, according to Santos et al. (Chemosphere, v. 84, p. 150, 2011).

The Probit analysis (Minitab, version 16) was used to treat the data obtained after 24 and 28h of exposure of the larvae. **Results:** Among the 29 ASPs obtained, three subfractions with larvicidal effects were identified, Group 18 (G18) presented a lethal concentration (LC_{50}) of 371(349 to 390) and 209 (183 to 230) ppm, the chloroform subfraction (CS) presented LC_{50} of 781(739 to 820) and 662 (597 to704) ppm, in 24 and 48h, respectively, and methanolic subfraction (MS) presented a percentage of mortality of 93 ± 4.4%, after 48h. In the antioxidant screening, MS was very active with EC_{50}<50 µg.mL and AAI > 1. **Conclusion:** The leaves of *E. fruticosa* have in their composition phyto-constituents that, when being semi-isolated, present antioxidant and larvicidal potential.: We thank **Financial support:** CAPES, FAPITEC, UFS.

09.056 *In vitro* **activity of a hydric extract of** *Physalis angulata* **against** *Trypanosoma evansi*. Povaluk AP, Cabral PFA, Borges GK, Miletti LC, Bastos-Pereira AL UESC

Introduction: *Trypanosoma evansi* is a single-celled protozoan widely distributed in Asia, Africa and South America. Its parasite the blood of wild and domestic animals, rarely humans, causing a disease called "Mal das cadeiras" or "Surra". With high morbidity and mortality, besides significant economic impact, its treatment is based only on few compounds that were discovered decades ago and which are associated to severe toxicity and appearance of resistance. Thus, there is an urgent need for new, accessible and less toxic drugs. This work has as objective testing in vitro antitrypanosomal activity of a crude extract of the Amazonian plant *Physallis angulata* (PA) in axenic cultures of *Trypanosoma evansi*. **Material and Methods:** The plant material was consisted of micropowered leaves, kindly given by Luis Lopez, from Amazonia Peruana National University. First an infusion was prepared by weighing 1g of *Phisallis angulata* and adding 10mL of boiling distilled water, the infusion was left to steep for 10 minutes and then centrifuged (20 minutes at 10000 r.p.m). The aqueous extract was filtered with 0.22 µm and from that concentration dilutions to the desired concentrations diluted in culture medium were made. For parasite multiplication, 100 µL of infected blood was inoculated into mice. After euthanasia, blood was centrifuged and the supernatant containing the parasites was submitted to culture in modified MEM medium. The culture started with 10^6 parasites.mL^{-1}. Different concentrations of PA (30, 100 and 300 µg.mL^{-1}) were added to the medium in different wells. As positive control, 0.5% of diminazen acetanilide diluted in DMSO (5 µL) was used . Medium and Medium with DMSO were used as negative controls. Parasites were counted in Neubauer camera in intervals of zero, 2, 4, 6, 12, 18 and 24 hours. Statistical analysis was performed by Two-way ANOVA, followed by Bonferroni's test, using GraphPad Prismversion 7. **Results:** The concentration of parasites, even without treatment (negative controls), was reduced by 50% in the first two hours, although this value was maintained until 12 hours, when was reduced by 70 to 80%. After two hours, the diminazene reduced the parasite counting by 74.5%, clearing the number of trypomastigotes after 6 hours. The reductions in the number of parasites began with PAat 300 µg.mL^{-1} after 6 hours, eliminating 90% of the parasites. At the concentration of 100 µg.mL^{-1}, there was a reduction of 99.8% of the parasites after 18 hours. The treatment with PA, in the concentration of 300 µg.mL^{-1}, has eliminated al the trypanosomes after 12 hours, as well as the concentration of 100 µg.mL^{-1} after 24 hours. **Conclusion:** PA may present a good antitrypanosomal potential against *Trypanosoma evansi*. **Financial Support**: FAPESC

09.057 Phytochemical profile and cytotoxicity of the organic extracts from *Miconia pyrifolia* **Naudin on leukemia cells**. Borba EFO, Sousa RS, Silva JAG, Princival IMRG, Nerys LLA, Pereira PS, Lima GMD, Ramos KRLP, Leite TCC, Silva TG UFPE

Introduction: *Miconia pyrifolia Naudin* is popularly known as *caiubim*, *caramondé* or white ink. The main objective of this work was to determine the phytochemical profile from the crude extracts obtained from the extraction of *Miconia pyrifolia* Naudin using the following organic solvents: hexane, ethyl acetate and methan. Additionally, the total phenol and tannin content even as the evaluation of the cytotoxicity of the extracts were accomplished against three cancer cells lines. **Methods:** The phytochemical activity was carried out by using a thin layer chromatography (CCD) method, where the organic extracts obtained in hexane, ethyl acetate and methanol were accurate at 5 mg mL final concentration and then eluted in hexane/ethyl acetate(70: 30 v/v), hexane/ethyl acetate(50: 50 v/v) and hexane/chloroform/ethyl acetate/methanol(2: 3: 4: 1 v/v). After elution, the plates were dried and sprayed with the specific chemicals and examined under ultraviolet light at 254 and 365 nm. The spectrophotometric determination of the phenolic compounds was made by the colorimetric method using a Folin-Ciocalteu reagent, where tannic acid was used as the reference for calibration curve. The residual phenol content was also quantified with the Folin-Ciocalteu reagent and the method used was casein precipitation, white is the difference between the total and residual phenol levels. The cytotoxicity assay was performed by the MTT [3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyl tetrazolium bromide] method. Cells lines HL-60 (acute promyelocytic leukemia) K-562 (chronic myeloid leukemia) and MOLT-4(acute lymphoblastic leukemia) were plated at $0.3x10^6$ cells/mL and incubated for 24 h. After, *M. pyrifolia* extracts were added at a concentration of 50 µg/mL. After 72 h of treatment, each well received 25 µL of MTT and after 3 h, the plates were centrifuged and the supernatant aspirated, then 100 µL of dimethyl sulfoxide (DMSO) was added. **Results:** The extracts from the organic solvents has proved to possess triterpenes, steroids, tannins and flavonoids. The presence of phenolic compounds and tannins was determined only in the methanolic extract: 35.1 ± 2.7 mg EAT/g ± SD of total phenols and 1.6 ± 0.3 mg EAT/g ± SD of total tannins. The percentage of inhibition growing cells IC%to the hexane extract was 78.8± 4.0 µg/mL (HL-60); 94.0 ± 0.6 (K-562) and 100.0 ± 0.0 (MOLT-4). The Acetate extract inhibited 100% of the growth of HL-60 and MOLT-4, and 89% to the K-562 line. The IC for the methanolic extract was 90% and 100% for K-562 and MOLT-4 cell lines, respectively. For the HL-60 strain, the inhibition was only 27.5 %. **Conclusion**: The organic extracts of *M. pyrifolia* are constituted by apolar and polar secondary metabolites. The extracts inhibited the growth of leukemia lines. This activity may be related to the presence of the chemical compounds found in the extract. **Financial support**: CAPES

09.058 Evaluation of the antinociceptive activity of *Cissus gongylodes* (**BAKER**) **Planch. fractions in mice**. Calazans MO, Perez ADC UFMG

Introduction: This work aims to better understand mechanisms involved in the pathophysiology of pain, as well as to investigate more effective alternative therapies with possible herbal extracts and phytopharmaceuticals. On that basis, the investigation of medicinal plants encourages research on a native one (but not endemic), known as cupá. The cupá – *Cissus gongylodes* (Baker) Planch - is a cosmopolitan vine in South America, found in Brazil in the states of Pará, Maranhão, Ceará, Mato Grosso, Mato Grosso do Sul, Minas Gerais and São Paulo. It is used by the Kayapó indigenous, mainly as food, and there are records of medicinal use of its leaves and branches. From information that cupá has analgesic properties for renal diseases and pains, the interest in investigating the therapeutic potential of this plant has appeared, with the intention of scientifically validate popular knowledge and develop new natural formulations for medicinal purposes. **Materials and Methods:** Swiss male mice were used, with weight between 30g and 40g, distributed in groups of n = 5, with methodology approved by the animal's use ethics committee (CEUA 278/2016). At first, the analgesic action of ethanolic extract 80% of cupá's branches were evaluated with the formalin test. In this, oral pre-treatment was made with diluted extract at concentrations 0 (control with 0,9% saline solution), 10, 30, 100, 300 and 1000 mg / kg (extract / animal weight). 30 min later the hyperalgesic agent (formalin 2%) was administrated by footpad injection on the animal's right hind paw and the paw licking time were recorded in the periods of nociceptive pain (0-5 min after formalin) and inflammatory pain (15-30 min). Subsequently, 5 fractions of this extract (called F1, F2, F3, F4 and F5) were tested, each isolated with 2 to 4 different substances. The method used was the paw withdrawal submitted to compression in the analgesimeter, with the purpose of measuring the nociceptive threshold to mechanical stimulus, in the adapted protocol of rats (Randall and Selitto, 1957) for mice (Kawabata et. Al., 1992). In this test the analgesic action peaks of each fractions were evaluated, on the hyperalgesic prostaglandin agent (PGE_2), administered as formalin, at a dose of 2µg. **Results and Conclusion:** Ethanolic extract 80% had its analgesic action corroborated with the formalin test, showing to be dose-dependent (there was a gradual reduction of the paw licking time in the two stages of pain - nociceptive and inflammatory - from the lowest to the highest dose of extract administered). In the second set of experiments, with the paw withdrawal tests, we found that of the 5 fractions, those that resulted in better analgesic potential were F1 (with action peak around 40 min, at the dose of 400µg) and F4 (with action peak around 25 min, at the dose of 600µg). F2 and F3 fractions did not fully reverse, even with increased doses, and F5 had no analgesic effect. The results suggest that F1 and F4 fractions have, at least, one substance each that has analgesic potential for nociceptive pain. The next steps are to test each substance contained in each fraction separately, select those with the best response to pain and find out which endogenous analgesic pathway is modulated by these substances. **Financial Support:** CNPq, CAPES, FAPEMIG

09.059 Cardiovascular effects of d-limonene in rats. Santos MRV[1], Nascimento GA[1], Souza DS[1], Vasconcelos CML[1], Lima BS[1], Araújo AAS[1], Durco AO[1], Quintans-Júnior LJ[1], Almeida JRGS[2], Oliveira AP[3], Barreto AS[1], Santana-Filho VJ[1] [1]UFS, [2]UNIVASF, [3]UFPI
Introduction: D-limonene is a monoterpene found in essential oils from aromatic medicinal plants. It presents antihyperglycemic, gastroprotector and vasorelaxant activities. The aim of this study was to evaluate the hypotensive, bradycardic and antiarrhythmic effects of DL in rats. **Methods:** Male Normotensive Wistar rats (200-300g) were used in all experiments (CEPA 13/16). After insertion of catheters and animals recovery (24h) Mean Arterial Pressure (MAP) and Heart Rate (HR) were obtained before and after intravenous injection of DL (1, 5, 10, 20, and 40 mg/kg) in control animals or in pre-treated animals with atropine, hexamethonium, L-NAME, or indomethacin. ECG parameters were measured by electrodes subcutaneously implanted. In the in vitro approach, the heart was removed and perfused using the Langendorff technique. **Results**: DL, in the doses of 10, 20, and 40 mg/kg, produced intense and sustained hypotension (-14 ± 6; -53 ± 3; -28 ± 8 %, respectively) and bradycardia (-33 ± 10; -57 ± 9; -53 ± 15 %, respectively), which were only attenuated by atropine. Furthermore, DL reduced arrhythmias from 15 ± 3 to 4 ± 3 ($p < 0.05$, $n = 4$). In perfused and isolated heart, DL (10-5 M) reduced FC (from 185 ± 12 to 93 ± 8 bpm; $p < 0.05$, $n = 4$) and increased cQT (from 86 ± 7 to 111 ± 7 ms; $p < 0.05$, $n = 4$), but did not change iPR and iQRS. **Conclusions**: O DL produces sustained hypotension and bradycardia possibly caused for muscarinic receptors activation and increasing in iQT. Furthermore, DL presents antiarrhythmic activity. **Financial support**: CAPES, CNPq e FAPITEC/SE

09.060 *Euterpe oleracea* **Mart**. (**açaí**) **extract downregulated renin angiotensin-system expression in visceral adipose tissue of obese mice**. Bem GF, Barcellos I, Romão MH, Silva DLB, Soares RA, Oliveira BC, Ognibene D, Soares de Moura R, Costa CA, Resende AC UERJ

Introduction: Obesity is a worldwide disease that is accompanied by metabolic abnormalities such as hypertension, hyperglycemia, and dyslipidemia. The production of renin-angiotensin system (RAS) components by adipocytes is exacerbated in obesity, contributing to the systemic RAS and its consequences. Our group demonstrated that açaí seed extract (ASE), rich in polyphenols, has a vasodilator, antioxidant, antihypertensive effect and reduces plasma renin levels in different experimental models of hypertension. Objective: The aim of this study was to evaluate the effect of the treatment with ASE and the drugs that interfere with RAS such as: enalapril (ENA) and telmisartan (TEL) on metabolic disorders observed in an experimental model of obesity. Methodology: The experiments were approved by the Ethics Committee of the UERJ (CEUA/034/2015). Male C57BL/6 mice (n=50) were separated in five groups: control (diet 10% fat), high fat (HF) (diet 60% fat), HF+ASE (diet 60% fat; 300 mg/kg^{-1}), HF+ENA (diet 60% fat; 30 mg/kg^{-1}) and HF+TEL (diet 60% fat; 10 mg/kg^{-1}). The animals received diets concomitantly with these treatments by intragastric gavage for three months. The body weight was measured using precision balance and systolic blood pressure (SBP) by plethysmography. The glycemia was measured with a glucometer. The effect of angiotensin II (Ang II, 0.0001-300 nmol) was studied in isolated mesenteric arterial bed. Expression of RAS proteins in visceral adipose tissue was determined by western blotting. **Results:** The increased ($p<0.05$) body weight in HF group was reduced ($p<0.05$) by treatment with ASE and ENA, and not by TEL. The oral glucose tolerance was increased ($p<0.05$) in HF group, and all treatments reduced ($p<0.05$) these alterations. The HF group showed increased ($p<0.05$) SBP, which was prevented ($p<0.05$) by treatment with ASE, ENA, and TEL. The Ang II vasoconstrictor effect was increased ($p<0.05$) in HF group, which was prevented ($p<0.05$) by treatment with ASE, ENA, and TEL. The reduced vasodilator effect of Ang II ($p<0.05$) in HF group was increased ($p<0.05$) by all treatments. The increased ($p<0.05$) expression of angiotensinogen, renin and AT1 receptor in HF and HF+ENA groups were reduced ($p<0.05$) by treatment with ASE and TEL. The expression of the AT2 receptor was reduced ($p \leq 0.05$) in HF group and, the treatment with ENA prevented the decrease ($p \leq 0.05$) in this expression. HF+ENA group showed increased ($p<0.05$) expression of ECA2, B2, and MAS receptors, which was reduced ($p<0.05$) in HF, HF+ASE, and HF+TEL groups. The ECA expression was not different among groups. **Conclusion:** All treatments were effective in preventing the increase of SBP associated with obesity. The treatment with ASE and ENA, but not TEL prevented the body weight gain and glucose intolerance. The beneficial effects of ASE may be due to a decrease in the expression of angiotensinogen, renin and AT1 receptor. This study shows a possibility for the use of ASE in the prevention of cardiovascular and metabolic alterations associated with obesity. **Funding**: CNPq and FAPERJ. **References**: da Silva Cristino Cordeiro V, de Bem GF, da Costa CA, et al. 2018. Euterpe oleracea Mart. seed extract protects against renal injury in diabetic and spontaneously hypertensive rats: role of inflammation and oxidative stress. Eur J Nutr 57(2): 817-832. - de Bem GF, da Costa CA, de Oliveira PRB, et al. 2014. Protective effect of Euterpe oleracea Mart (açaí) extract on programmed changes in the adult rat offspring caused by maternal protein restriction during pregnancy. J Pharm Pharmacol 66: 1328–1338. - de Oliveira PR, da Costa CA, de Bem GF, et al. 2010. Effects of an extract obtained from fruits of Euterpe oleracea Mart. in the components of metabolic syndrome induced in C57BL/6J mice fed a high-fat diet. J Cardiovasc Pharmacol 56: 619-626. - Frigolet ME, Torres N, Tovar AR. 2013. The renin–angiotensin system in adipose tissue and its metabolic consequences during obesity. Journal of Nutritional Biochemistry 24: 2003–2015. - Moura RS, Ferreira TS, Lopes AA, Pires KM, Nesi RT, Resende AC, Souza PJ, Silva AJ, Borges RM, Porto LC, Valenca SS. 2012. Effects of Euterpe oleracea Mart. (AÇAÍ) extract in acute lung inflammation induced by cigarette smoke in the mouse. Phytomedicine 19(3-4): 262-269. - Schetz M, De Jong A, Deane AM, et al. 2019. Obesity in the critically ill: a narrative review. Intensive Care Med 45(6): 757-769.

09.061 Study of estrogenic and antiestrogenic activity and reproductive toxicity in female rats treated with ethanol extract of *Ipomoea carnea*. Fernandes MZLCM, Silva MCSS, Fernandes MLM, Fernandes MLM, Costa LB, Barbosa JGC, Borba MMP, Cardoso JFSC, Mineiro ALBB UFPI

Introduction: *Ipomoea carnea,* Convolvulaceae is used in traditional medicine in many countries. This plant presented a great potential for anti-inflammatory activity, antioxidant activity, anti-diabetic activity, antimicrobial activity, wound healing activity, immunomodulatory activity, cardiovascular activity, embryotoxic effect, antifungal activity, hepatoprotective activity and anxiolytic properties (SATISH, IKHIL, 2016). Thus, the objective is to investigate the effects of ethanolic extract of *I. carnea* on the reproductive system of female rats as well as their toxicity. **Methodology**: The methodology was approved under protocol nº092 / 14 by the Ethics and Animal Experimentation Committee (UFPI). In the test 60 ovariectomized rats were divided into 10 groups (n.6), treated for seven consecutive days every 24 hours, six groups with ethanolic extract of *Ipomea carnea* (EEIc) at doses of 25, 50 and 100mg/kg four control groups distilled water + corn oil, estradiol (0.05µg), tamoxifen (4mg/kg) and tamoxifen + estradiol. After the treatment the animals were weighed and euthanized, then the blood was collected to the biochemical profile and the uterus, kidneys, lung and liver and collected and weighed afterwards preserved in 10% buffered formalin for histopathological analysis. Statistical analysis values were expressed as mean ± standard error of the mean (E.P.M). Analysis of variance by ANOVA One-way, followed by Tukey's test and analysis of variance Kruskal Wallis followed by Dunn test, with significance level of 5% ($p < 0.05$). **Results and Discussion**: In the evaluation of the estrogenic activity of the groups treated with the ethanolic extract of *I. carnea* (EEIc) at doses of 25, 50 and 100 mg/kg did not cause alteration in absolute and relative weight of the uterus in relation to the negative control (water + corn oil). However, there was a significant change in relation to the relative weight of the liver, showing that the higher, the dose of the extract, lighter was the weight of the organ. In the study of the antiestrogenic activity (EEIc + Estradiol), there was a change in the relative weight of the uterus, it was observed that there was a statistically significant difference ($P < 0.005$) between the treated group EEIc (100mg/kg) when compared to the positive control group (estradiol) showing that it was able to prevent the increase in relative weight of the uterus. It was also found that the kidneys showed a reduction of the relative weight of the right kidney in the larger and smaller dose of the EEIc in relation to the controls. In addition to an increase in the relative weight of the liver in the EEIc group of 50mg/kg, tamoxifen and estradiol, differing from the groups of higher and lower concentrations of the extract that had a reduction in body weight. **Conclusion**: In the present study the ethanolic extract presented antiestrogenic activity was able to decrease the relative weight of the liver and kidney, indicating a toxicity on these organs. **Reference:** SATISH A. B.; NIKHIL C. T. *Ipomoea carnea* Jacq.: Ethnobotany, Phytochemistry and Pharmacological Potential, Int. J. Curr. Res. Biosci. Plant Biol. 3 (8): 138, 2016. **Keywords:** Ipomoea carnea; rats; antiestrogenic activity**.**

09.062 Antiulcerogenic activity of the dry extract of pods of *Libidibia ferrea* **Mart. ex Tul.** (**Fabaceae**). Wanderley AG[1], Prazeres LDKT[1], Aragão TP[2], Brito SA[3], Almeida CLF[4], Silva AD[1], Damasceno BPGL[5], Rolim LA[4] [1]UFPE, [2]UPE, [3]FSM, [4]UNIVASF, [5]UEPB

Introduction: *Libidibia ferrea,* "pau-ferro" or "jucá", is used in ethnomedicine to treat inflammation and diabetes. Ethnopharmacological studies in Amazonian communities in Brazil reported the use of *L. ferrea* in the form of tea and syrup, the infusion of the fruits for control of gastric problems. Peptic ulcer is a term used to refer to an acid-peptic lesion of the gastrointestinal tract resulting in rupture of the mucosa and submucosa. This study investigated the antiulcerogenic activity of the dry extract of *L. ferrea* pods (DELfp). **Methods:** The pods were collected in Barbalha-CE. The plant material (100 g) was subjected to cold maceration with 40% hydroalcoholic solvent for 3 days. The solvent completely removed with Spray Dryer and presented a yield of 18.9%. Phytochemical characterization was performed by HPLC/MS. The gastroprotective activity of DELfp was evaluated in animal models of gastric lesions (n = 5-7/group) induced by absolute ethanol, acidified ethanol, and indomethacin. The anti-secretory ability and the influence of –SH and NO compounds, on the antiulcerogenic activity of DELfp were evaluated. In addition, healing activity of the extract was performed according to acetic acid-induced chronic ulcer model. The experimental protocols used male and female Wistar rats (200-330g). Differences between groups were analyzed by Student's T test or ANOVA + Dunnett's test ($p<0.05$). **Results:** HPLC/MS extract identified phenolic compounds, gallic acid, and ellagic acid. DELfp (100, 200 and 400mg/kg) reduced the area of gastric lesions induced by ethanol by 46.4, 87.6 and 96.0%, respectively. As for the acidified ethanol model, DELfp (200 and 400mg/kg) reduced the lesion area by 59.1 and 96.6%, respectively. DELfp (100, 200 and 400mg/kg) inhibited indomethacin-induced lesions by 66.7, 69.6 and 65.8%, respectively. DELfp (200mg/kg) reduced gastric secretion and total acidity by 52.7% and 29.9%, compared with negative groups controls, respectively, 0.74±0.08g and 18.63±1.65mEq.[H^+]/mL/4 h. In the presence of N-ethylmaleimide (10mg/kg, i.p.), the effect of DELfp was not evident (399.80±50.35mm^2) when compared to the lesioned control group (LC, 389.90±38.15mm^2). However, DELfp presented a gastroprotective effect in the presence of L-NAME (70mg/kg,i.p.), reducing the lesions by 95.6% compared to the blocked control group (196.30±34.43mm^2). In the chronic ulcer model, DELfp reduced the area of the gastric lesion by 77.44% compared to the control group (61.00±1.98mm^2). **Conclusion:** DELfp showed antiulcerogenic and gastric healing activity mediated by antisecretory activity, and involvement of –SH compounds. These mechanisms may contribute to the healing of chronic ulcers, promoted by the dry extract of pods of *L. ferrea.* **License number of ethics committee:** (Federal University of Pernambuco, license number 0016/16). **Financial Support:** FACEPE (IBPG-0383-4.03/15).

09.063 Loss of adhesion contributes to antimetastatic activity of proteases from *Vasconcellea cundinamarcensis* latex in murine melanoma. Dittz D[1], Nunes IP[2], Souza MK[2], Salas CE[2], Lopes MTP[2] [1]UFPI, [2]UFMG

Introduction: P1G10, a proteolytic fraction obtained from V. cundina marcensis' latex by Sephadex G10 chromatography, contains 23 cysteine proteases and has antitumor/antimetastatic activity on murine melanoma by reduction of cell adhesion and migration, and apoptosis induction. Sub-fractions CMS1 and CMS2, containing 3 and 5 cysteine proteases respectively, are obtained from P1G10 by CM-Sephadex chromatography. We aimed to identify if the antimetastatic activity as well as the cellular mechanisms of P1G10 in murine melanoma are conserved in the sub-fractions. **Methods:** B16F10 cells were s.c. injected, in the right ear of C57Bl6 mice. At 15th day, primary tumors were surgically removed, and animals were treated (P1G10, CMS1 or CMS2 1 or 5 mg/Kg) s.c. for 21 days. B16F10, CHO and BHK-21 cell viability, assessed by MTT assay, was determined after P1G10, CMS1 or CMS2(0.1-1000 ug/mL) exposure for 72h. B16F10 deadhered cells in the supernatant was quantified by resazurin after P1G10, CMS1 and CMS2 treatment (1-50 ug/mL, 2-24h). De adhered B16F10 cells were used to determine their ability to adhere in ECM components and to invade a collagen-based membrane according to kit instructions. De adhered B16F10 obtained after P1G10, CMS1 or CMS2 (30 ug/mL, 24h) treatment had determined the supernatant MMP-2 and -9 gelatinolytic activity (zymography),sub-diploid DNA (flow cytometer), AKT, ERK and Caspase 3 levels (western blot) and lung colonization ability after 15 days of i.v. cell injection. Animal protocols were approved by CETEA/UFMG (229/2013). **Results:** P1G10 and CMS2 (5 mg/Kg), but not CMS1, reduced lung metastasis (80%). P1G10 displayed lower CC-50 in B16F10 (0.5 ug/mL) compared to BHK-21 (12.0 ug/mL) and CHO (17.0 ug/mL). CMS2, but not CMS1, showed to be more cytotoxic to B16F10 (10.5 ug/mL) than to CHO (454.0 ug/mL) and BHK-21 cells (440 ug/mL). B16F10 deadhesion started after 2h of P1G10 and CMS1 30 µg/mL (11% and 52%, respectively) and to CMS2 1 µg/mL (15%). Maximum deadhesion was observed after P1G10 (84% at 30 µg/mL, 24h), CMS1 and CMS2 (76% and 92%, respectively, at 30 ug/mL, 16h) treatment. Deadhered B16F10 cells after P1G10 30 ug/mL, 24h, had reduced their adhesion on vitronectin (23%) and laminin (13%). Inhibition of cell adhesion after CMS2 treatment was higher than CMS1 (41% vs 17% on vitronectin, 71% vs 24% on fibronectin and 37% vs 20% on laminin).CMS1 and CMS2, but not P1G10, reduced cell invasion (33% and 55%, respectively) on collagen-based membrane. P1G10, CMS1 and CMS2 reduced MMP-2 (54%, 62% and 63%, respectively) and -9 (70%, 76% and 78%, respectively) activity. Sub-diploid DNA was not increased in deadhered cells but P1G10, CMS1 and CMS2 reduced AKT (53%, 61% and 65%, respectively) and ERK (85%, 85% and 78%, respectively) phosphorylation and only CMS2 activated Caspase-3 (39%) in B16F10 cells. Deadhered cells had their lung colonization ability reduced after P1G10 (73%), CMS1 (92%) and CMS2 (98%) treatment (30 ug/mL, 24h)**. Conclusion:** Loss of adhesion promoted by proteolytic fractions from V. cundina marcensis downregulates proliferative pathway and MMPs activity, reducing cell invasion and metastasis in murine melanoma. Furthermore, CMS2 sub-fraction stands out by preserving the effects of the main fraction, P1G10. **Financial Support**: CNPq, FAPEMIG and CAPES.

09.064 Sulfated polysaccharide fraction from marine algae *Gracilaria caudata* **reduces mechanical hypernociception and inflammation during experimental arthritis in mice**.
Silva RO[1], Nascimento FG[2], Oliveira FFB[3], Bingana RD[3], Carmo LD[3], Chaves LS[3], Barros FCN[3], Barbosa ALDR[4], Freitas ALP[3], Soares PMG[3], Souza MHLP[3], Medeiros JVR[4] [1]UFPE, [2]INTA, [3]UFC, [4]UFPI
Introduction: Marine algae are rich sources of sulfated polysaccharides (PLS), which are recognized as having a number of biological activities. Recent studies have shown that PLS extracted from *G. caudata*, demonstrated gastroprotective and anti-inflammatory effects. **Aims:** To investigate the effect of a sulfated polysaccharide fraction from marine algae *G. caudata* (GC) in the zymosan- and CFA-induced arthritis models in mice. **Methods:** Mice (25-30g, n=8, Protocol Nº 068/14) received saline or GC (3, 10 and 30 mg/kg, *i.p.*) 1h before to injection of zymosan (30 µg/art). Mechanical hypernociception was evaluated by the electronic Von-Frey at baseline and 2, 4 and 6 h after zymosan injection. After 6 h of induction, the animals were sacrificed and synovial fluidwas collected for determination myeloperoxidase (MPO) activity, leukocyte count, IL-1β and nitrate/nitrite (NO_3/NO_2) levels. Joint edema was evaluated for measuring the diameter articular and vascular permeability through extravasation of Evans blue dye. In others experimental design, the mice received saline or GC (30 mg/kg, *i.p.*) 1 h after complete Freund's adjuvant (CFA) (1 mg/ml; 20 µl/paw) and was determined mechanical hypernociception and paw edema acute (between 2 and 8 h) sub-chronic (between 24 and 72 h) and chronic (between 6 and 10 days), index arthritis (at 72 h and 10 days) and body weight. **Results:** Treatment with GC significantly reduced ($P<0.05$) zymosan-induced mechanical hypernociception (4.05 ± 0.31 for GC 3mg/kg, 2.96±0.35 for GC 10 mg/kg, 1.73±0.38 for GC 30 mg/kg *vs.* 5.42±0.48 ∆g for zymosan group) in a dose-dependent manner and joint edema (0.21 ± 0.09 *vs.* 0.62 ± 0.05 mm), compared to the zymosan group. Likewise, GC (30 mg/kg) significantly decrease ($P < 0.05$) MPO activity (23.86 ± 4.95 *vs.*59.57 ± 4.41 UMPO/ml), leukocyte (3.73 ± 0.88 *vs.*21.16 ± 3.38*x* 10^3 cells per cavity) and neutrophils (1.45 ± 0.28 *vs.*18.22 ± 3.22*x* 10^3 cells per cavity) count, IL-1β (1857.0 ± 578.1 *vs.*4776.0 ± 991.1 pg/ml) and nitrate/nitrite (NO_3/NO_2) (6.83 ± 1.87 *vs.*14.08 ± 1.73 µM) levels in the synovial fluid, compared to the zymosan group. In addition, GC (30 mg/kg) was effective ($P < 0.05$) in the inhibition of mechanical hypernociception and paw edema in acute (82.2% and 40.6% of inhibition, respectively), sub-chronic (73.3% and 39.8% of inhibition, respectively) and chronic(80.6% and 38.5% of inhibition, respectively)phases in the CFA-induced arthritis model. **Conclusions:** Our results showed that GC exert anti-inflammatory effect in the arthritis models acute chronic by reduces neutrophil migration, NO and IL-1β levels, reducing paw edema and mechanical hypernociception. **Financial Support:** CNPq, FUNCAP and FAPEPI.

09.065 Effects of *Piper hispidum* **in** *Danio rerio* **Behavioral Tests**. Bastos-Pereira AL, Cabral PFA, Cipriani DS UESC

Introduction: Piperaceae is a family of traditional plants used by popular medicine, found from Mexico to Argentina, distributed in five genera and more than 20 thousand species, which includes shrubs, trees, herbs, creepers and sub-shrubs. Piper hispidum (PH) is an Amazonian plant popularly known as “falso jaborandi”, “matico” and “aperta ruão”. It is used in traditional medicine for different purposes such as inflammation, wound healing, local anesthesia, liver and spleen disorders. Zebrafish (*Danio rerio*) have been widely used as a model for screening potential bioactive compounds. The aim of this study is to investigate the influence and effects of PH on swimming behavior in zebrafish. **Methods**: The fishes were purchased and kept for 30 days for acclimatization in a 30L aquarium, in the Pisciculture sector. The water temperature was maintained at 27°C and the room was at 25°C, in a light/ dark cycle of 12h. They were fed daily with flocked commercial feed. Seven fishes were randomly chosen for each treatment group. In this regard, there were four groups: negative control (vehicle) and PH in three dosis (30; 100; 300 $mg.L^{-1}$). For the experiment, the fishes were fasted 24h before the test. The plant material was consisted of micropowdered leaves, kindly given by Luis Lopez, from Amazonia Peruana National University. An infusion was prepared using boiled distilled water, followed by centrifugation (20 minutes at 10000 r.p.m). The animals were placed, individually, in beakers with 300mL of aquarium water and infusion or vehicle 10 minutes. After this time, they were tested individually in a 2L tank and the images recorded for five minutes to evaluate the locomotor activity. The tank was virtually divided into two depth zones which were used for data analysis. The parameters included the latency to cross to the upper area of the tank, the total time in each zone and the number of transitions between the zones. Statistical analysis was performed with one-way ANOVA and Bonferroni tests, using GraphPad Prism version 7. **Results:** There were statistical differences in the latency to enter the top area on fishes treated with PH in 30, 100 and 300 $mg.L^{-1}$, all compared to Vehicle group (p value: 0,0035; 0,0163; 0,0278, respectively). The total time spent in the upper area of the tank was higher in fishes which received the dosis of 30 (p value 0,0136) and 300 $mg.L^{-1}$ (p value 0,0207), also compared to the negative control group. Also, fishes which were treated with 30 $mg.L^{-1}$ of PH have presented a higher number of transitions between zones (p value 0,0009). **Conclusion:** Fishes exposed to aversive situations, such as these tests, have a tendency to stay at the bottom of the tank and reduce the vertical exploration of the area. Thus, it is expected that, when fish are exposed to substances with anxiolytic potential, the time spent at the top is higher, as well as an increase in vertical exploitation. These results suggest the PH infusion has anxiolytic like effects, especially at 30 $mg.L^{-1}$ in Zebrafish. **Financial Support**: FAPESC **References:** Rosemberg DB et al. Behavioral effects of taurine pretreatment in zebrafish acutely exposed to ethanol. Neuropharmacology, 63:613, 2012.

09.066 Vasoprotective effects of piridoxamine, an inhibitor of advanced glycation end-products, in non-alcoholic fatty liver disease associated liver microcirculation disturbances. Silvares RR, Pereira ENGS, Rodrigues KL, Flores EEI, Daliry A Fiocruz

Background: Metabolic syndrome (MetS) is a major clinical and public health challenge worldwide and is a risk factor for the development of metabolic and cardiovascular pathophysiological conditions. Non-alcoholic fatty liver disease (NAFLD) affect one-third of the adult population and is defined as the accumulation of fat in the liver of patients who do not consume excessive alcohol and is considered to be the hepatic manifestation of MetS. However, the molecular mechanisms that account for disease progression remains unclear. Previous studies of our group and others have demonstrated that the increase in liver advanced glycation end-products (AGEs) levels and microcirculatory disturbances are present in NAFLD. However, no direct evidence of the link between AGE levels, oxidative stress, inflammatory pathways and hepatic microcirculatory alterations have been demonstrated. In the present study, we investigated the hypothesis that inhibition of AGEs formation using pyridoxamine (PM) would exert protective effects on metabolic and microcirculatory disorders associated with NAFLD. **Methods:** The NAFLD model was induced in Wistar rats by 28 weeks of feeding with hyperlipidic diet (HFD). The rats were then treated daily with pyridoxamine (60mg/kg/dia) between weeks 20 and 28 and all the analysis were carried at the end of the protocol. In the liver microcirculation, the recruitment of leukocytes and the number of vitamin A positive hepatic stellate cells (HSCs) were examined by in vivo microscopic. Tissue perfusion was accessed by laser speckle contrast imaging (LSCI). Oxidative stress and inflammatory parameters were assessed by thiobarbituric acid reactive substances measurement (TBARs) and RT-PCR. **Results:** Wistar rats with HFD-induced NAFLD showed steatosis and increased body weight, epididymal and abdominal fat content, fasting blood glucose levels, hepatic triglycerides and cholesterol and impairment of glucose metabolism. Treatment with pyridoxamine was able to reverse all the alterations observed in the HFD group. Regarding the hepatic microcirculatory parameters, the HFD group showed increased rolling and adhesion of leukocytes, increased HSCs activation and decreased tissue perfusion. PM showed a vasoprotective effect in the hepatic microcirculation of HFD-induced NAFLD. Liver tissue of the HFD group presented increase in oxidative stress, whereas the treated group presented a reduction in this parameter. However, we did not observe diferrences in the gene expression of IL-1β, eNOs and catalase between the groups. **Conclusion:** PM modulates oxidative stress, AGEs, endothelial dysfunction and/or other metabolic disturbances in rats with HFD-induced NAFLD, thus providing important vasoprotective effects. Therefore, PM may be a potential treatment for microcirculatory and metabolic complications associated with NAFLD. Este trabalho foi financiado por CNPQ, FAPERJ e PAPES / FIOCRUZ. Todos os procedimentos experimentais foram conduzidos de acordo com os princípios internacionalmente aceitos para o Cuidado e Uso de Animais de Laboratório e foram aprovados pelo Comitê de Bem-Estar Animal da Fundação Oswaldo Cruz (Licença L-019/2016).

09.067 *Ilex Paraguariensis*: **A possible strategy to prevent Parkinson's disease**. Chitolina B, Barbisan F, Turra BO, Rosa TSM, Azzolin VF, Silveira AF, Cunha BSN, Ribeiro EE, Ribeiro EAM, Praia RS, Cruz IBM UFSM

Introduction: Parkinson's disease (PD) is thought to be a result of the association between genetic and environmental factors and the combination of these factors with aging, causing mitochondrial and cell membrane dysfunctions, culminating with oxidative stress and chronic inflammation. PD has as its main characteristic pathological disorders in the central nervous system (CNS), due to the occurrence of degenerations of dopaminergic cell from the substantia nigra. Bioactive compounds with antioxidant and anti-inflammatory properties can reduce oxidative stress. The yerba mate (Ilex paraguariensis), is rich in phytochemical compounds with antioxidant capacity as polyphenols, alkaloids, theobromine, caffeine, tannins. Rotenone, a pesticide that is a strong inhibitor of the mitochondria's complex I, has been studied as a model of PD in both animal and cell models, as it produces a progressive degeneration in dopaminergic neurons. Our objective was to investigate the possible protective role of yerba mate on the damage induced by rotenone in an in vitro model of Parkinson's disease. **Methods:** The SHSY-5Y cell line, frequently used as a template for PD, was cultured under suitable environmental conditions. An infusion of yerba mate, prepared with water at 90ºC and maintained in infusion for 10 minutes, was used as treatment. Initially the cells were exposed to mate (10 mg/ml) for 24 hours, then the rotenone (40 µM) was added and the cells remained in culture for 72 hours. After this period, analyzes related to oxidative metabolism were carried out: cell proliferation via MTT test, carbonylation of proteins, lipid peroxidation and DNA damage (via 8-hydroxy-2-deoxyguanosine [8-OHdG] test). And the inflammatory cascade: Protein levels and gene expression of interleukins IL-1β, IL-6 and the anti-inflammatory cytokine IL-10. The data was analyzed using the Graph Pad Prism 5.0 software, using the 2-way ANOVA followed by the Tukey post-Hoc test. Data were considered significant at $p < 0.05$. **Results:** Cells exposed to rotenone alone showed a significant increase in oxidative and proinflammatory cytokines, as well as a decrease in IL-10 levels (anti-inflammatory) compared to the control group. However, when cells were treated with yerba-mate, before exposure to rotenone there was a significant decrease in oxidative markers, especially 8-OHdG. The inflammatory markers analyzed here had a significant decrease and concomitantly the yerba mate was able to raise IL-10 levels. We emphasize that in this study infusion of *Ilex paraguariensis* (± 60ºC, contact for 10 minutes) was used as it is consumed in "Chimarrão" and with water as it's only solvent**. Conclusion:** our initial results show a potential preventive effect of the herb to PD. Further studies, including animal models, must be carried out to prove this hypothesis, and the possible use of *Ilex paraguariensis* for the development of drugs to prevent PD. **Acknowledgment and Financial Support:** Fapergs. **References:** BRACESCO, N. et al. J. Ethnopharmacol. v. 136, p. 378, 2011. BONADIMAN, B.S. R. et al. J FunctFoods.v.36, p. 375,2017. PRASAD, K. N.CurrAgingSci. v. 10. p. 177,2017.

09.068 Effects of Euterpe oleracea Mart. (**acai**) **extract in 3T3-L1 pre-adipocyte cells in Culture**: **role of renin angiotensin system**. Silva DLB, Barcellos I, Bem GF, Romão MH, Oliveira BC, Soares RA, Menezes MP, Trindade PL, Daleprane JB, Costa CA, Ognibene D, Soares de Moura R, Resende AC UERJ

Introduction: The increase in obesity rates represents urgent public health concerns associated with serious comorbidities and it is the main risk factor for metabolic syndrome. Recent studies have shown that the obesity is associated with increased local and systemic renin-angiotensin system (RAS) activity. Evidence from our group demonstrates that açaí seed extract (ASE) promotes an anti-obesity effect and an antihypertensive effect associated with a significant reduction of plasma levels of renin. Therefore, the purpose of this study was to evaluate the effect of treatment with ASE and the drugs that interfere with RAS such as enalapril (ENA) and telmisartan (TEL) on pre-adipocytes 3T3-L1 in culture. **Methods:** After confluence and differentiation, the mouse 3T3-L1 cells were separated in four groups: control (maintained with basal medium); ASE (basal medium + ASE 25 mg); ENA (basal medium + ENA 63 mg); TEL (basal medium + ENA 63 mg). The dose of ASE (25 mg) used in this study was based on previous study and the treatment was performed concomitantly with the exchange of the culture medium, which occurred every 48 hours. The cell viability assay (TTM) was performed at the end of 7 days of differentiation using the Alamar Blue cell viability reagent. The expression of RAS components in adipocytes were determined by western blotting. The absorbance was evaluated at wavelengths of 570 and 600 nm. **Results:** In the TTM assay, we observed a decrease in the feasibility of the cells treated with 125 mg of ENA and TEL. There was no change in the feasibility of the cells treated with 16, 31 and 63 mg of ENA and TEL. In the pre-adipocytes, AT1 expression was decreased in ASE, ENA and TEL compared to control group. The AT2 receptor expression was increased by ENA and TEL and reduced by ASE. The treatment with ASE, but not ENA and TEL increased the expression of B2 receptor. The MAS receptor expression was increased in TEL group when compared to the control and ASE groups, and no difference was observed between ENA, ASE and control groups. Finally, the treatment with ASE, but not ENA and TEL decreased the renin expression in adipocytes. **Conclusion:** Our findings demonstrate that ASE has the ability to modulate the main components of the renin angiotensin system in adipocytes, suggesting a potential mechanism for the prevention of obesity.

Financial Support: CNPq and FAPERJ

09.069 Antileishmania activity *in vitro* **of cordiaquinone E obtained from** *Cordia polycephala* **roots**. Rodrigues RRL, Nunes TAL, Sousa JMS, Rodrigues KAF, Marinho Filho JDB, Freitas HPS, Pessoa ODL, Araújo AJ UFPI, UFC

Introduction: Cordiaquinones, naphthoquinones obtained from plants of the genus Cordia, have several described biological activities, including antifungal, larvicidal and cytotoxic effects in previous studies. Leishmania is present as a problem for public health, where its transmission through the insect vector is far from being modulated. Currently, the treatment is based on pentavalent antimonials with high toxicity, difficult application and high cost, besides current resistance stimulators for some species of Leishmania genus. Thereby, the objective of this work was to evaluate the antileishmanial effect of cordiaquinone E, isolated from *Cordia polycephala* roots, in promatigotes of *Leishmania amazonensis*. **Methods:** To test for antileishmanial activity were used culture of promastigote forms of *L. amazonensis* maintained in Schneider's medium supplemented with 10% fetal bovine serum and 1% of penicillin at 26ºC.The leishmanicidal activity was evaluated using 10^6 promastigotes per well in 96-well plates in the presence of serial concentrations of 200 to 1.56 µg/mL of cordiaquinone E. The cultures were kept for 48 h at 26ºC. After incubation, growth inhibition was assessed by the[3-(4,5-dimetiltiazol-2yl)-2,5-difenil tetrazolium](MTT) assay, where 10 µL of bromate de MTT solution was added in each well. After 4 h, 10% sodium dodecyl sulphate was added. Finally, readings were performed at 540 nm on a microplate reader. The statistical analyses were performed by ANOVA followed by Tukey test with $p < 0.05$ as the maximum level of significance. **Results**: The inhibitory profile of cordiaquinone E on *L. amazonensis* promastigotes showed a significant decrease ($P< 0.05$) in parasite viability, with 100% inhibition of promastigote growth at concentrations of 12.5 and 6.25 µM. The half maximal inhibitory concentration (IC_{50}) was 4.75 µM at 48 h of exposure. In cultures treated with cordiaquinone E, we used an optical microscope to observe morphological changes in the promastigotes, such as cells with rounded or completely spherical shapes, as well as cellular debris, in contrast to the spindle forms present in the control. **Conclusion**: The data in this study show that the cordiaquinone E has antileishmania activity in promastigote forms of *L. amazonensis*. Further work is warranted, involving more in-depth mechanistic studies and *in vivo* investigations. Supported by: CNPq, CAPES and INCT BioNat.

09.070 Locomotor activity of *Maclura tinctoria* **sapwood ethanolic extractin fish**. Barbosa LB, Rodrigues P, Pires LC, Ferrari FT, Coldebella R, Pedrazzi C, Baldisserotto B, Heinzmann BM UFSM

Introduction: Medicinal plants present a vast pharmacological potential due to their secondary metabolites variability, so there is a need to analyze the efficacy, safety, action mechanism and toxicity of plant extracts(BATISTA, E.K.F. Med Plants, 18: 433, 2016; MACIEL,M.A.M.Quim.Nova,25: 429,2002). Thereby, for antinociceptive studies, the natural product should not modify locomotor activity per se of the experimental animals (BALDISSEROTTO, B.P.Vet. Anaesth. Analg., 45: 4, 2018). Increase in locomotor activity in fish is assessed as an aversive behavior that generate stress, however when fish swim at the upper side of the aquarium is considered an anxiolytic-like behavior (BANDEIRA, G. J. Aquac. Fish, 482: 49, 2018). Therefore, considering that the tree *Maclura tinctoria* has great pharmacological potential, this work aims to evaluate the locomotor activity of Rhamdiaquelen treated with its sapwood extract (SE) to verify fish swimming behavior for the possible development of an antinociceptive. **Methods:** Sapwood of *M. tinctoria* was collected in Porto Mauá, RS, Brazil. The extraction was performed by soxhlet with ethanol (BRAZILIAN PHARMACOPOEIA, 5th.ed.,2010).Silver catfish (n= 8) were individually anesthetized by immersion bath with eugenol(50 $mg.L^{-1}$)and the extract was administered intramuscularly at the doses of 10, 30 e 100$mg.kg^{-1}$. Fish were transferred to 1L aquarium containing water to recovery for 10 min. Subsequently, behavioral analysis was recorded individuallyduring 20 min in a glass Aquarium (24 L× 8 W × 20 H cm). The videos were analyzed by Any Maze software using as parameters average and maximum speeds, distance traveled and distance traveled at the top, middle and bottom of the aquarium, absolute turn angle, mobile time, immobile time, and number of line crossings (RODRIGUES, P. Physiol. Behav. Submitted, 2019 (Ethic process N° 5591250219). **Results**: The lowest doses from SE (10 and 30 $mg.kg^{-1}$) caused a decrease in the total distance traveled and in the middle of the aquarium. The fish also presented lower mean speed and number of crosses in relation to control. In addition, the fish swimming behavior at the aquarium depths decrease after SE administration at the dose 10 $mg.kg^{-1}$. This swiming behavior may indicate a possible sedative effect, since SE exhibited sedative properties in this same fish species in immersion bath (GOMES, L. D. C. Cienc. Rural, 30: 179, 2001; PIRES,L. Federal University of Santa Maria, 72,2018). Finally, only the higher dose of SE (100 $mg.kg^{-1}$) did not alter none of the swimming parameters evaluated in this study. **Conclusion**: The SE presented sedative-like behavior at the lowest doses. Only the higher did not alter any of the analyzed parameters and possibly can be applied in pharmacological models that use the video-tracking software for behavioral analysis. **Financial Support:** FIT- BIT; CNPq andCAPES.

09.071 Cardiovascular effects induced by fractions of extract of leaves from *Pereskia aculeate miller* **in Spontaneously Hypertensive Rats**. Lopes AAA[1], Paulino ET[1], Rodrigues AKBF[1], Bernardino AC[1], Silva JCG[1], Oliveira KRV[1], Machado MLDP[1], Pinto NC[2], Scio E[2], Ribeiro EAN[1] [1]UFAL, [2]UFJF

Introduction: *Pereskia aculeate Miller* is a creeper plant, native from Asia, north and south american and very found to northeast of Brazil (DUARTE &HAYASHI,2005). In our country is popularknow as "ora-pro-nobis". Have been used as vegetable on a diet or a medicinal plant by Brazilian Tradicional Medicine(PINTO et al, 2012). However, *Pereskiagrandifolia* also called by Brazilian people as "ora-pro-nobis" and "carne de pobre" being confused usually is a medicinal plant to antihypertensive uses (SOUZA et al, 2014). *P. grandifolia* has shown hypotensive effects by involvement of arginine-vasopressine inducing diuretic effects (KAZAMA et al, 2012). But the cardiovascular effect of *P. aculeata* remains unclear. **Objective:** The aim of this work was to evaluated the cardiovascular effects induced by extract and fractions of the *Pereskiaaculeata* in Spontaneously Hypertensive Rats (SHR). **Methods:** Were used for the pharmacological experiments fractions: *P. aculeata* hexanic fraction (FHPa), *P. aculeata* insoluble precipitate fraction (FPPTPa), *P. aculeata* dichloromethane-fraction (FDCMPa).Male spontaneously hypertensive rats (200-250 g) were anesthetized (pentobarbital sodium 45 mg/kg i.p.) and polyethylene catheters were inserted into the abdominal aorta and inferior vena cava for measurements of blood pressure and drug administration(0,1-60 mg/kg) respectively. The experiments were performed 24 hours after surgery. The changes of the blood pressure and heart rate were recorded by AQCAD program. All the experimental procedures were approved by ethics committee Nº 73/2014. Results**:** FHPa (MAP= -4.1±1.4; -11.4±2.8; -14.2±1.2; -10.1±1.4; -12.2±2.3; -19.2±9.8; -25.1±6.8; -16.7±3.9; -21.0±5.3; -30.0±2.0 %respectively)/(HR=-2.1±4.3; -6.1±1.2; -6.2±0.8; -7.0±2.6; -4.0±2.2; -19.0±11.9; -29.4±13.4; -28.5±11.1; -43.6±14.1; -70.3±4.1% respectively)FPPTPa(MAP=-0.1±4.2;-1.9±2.2;-0.8±1.1;18.4±17.8;-2.2±3.8;-28.2±18.1;-29.8±10.9;-29.8±3.1;-45.3±4.6;-51.7±3.6 %respectively)/(HR=2.2±1.4;-2.2±1.7;-7.2±4.3;-45.5±15.7;-63.5±5.9; -68.9±2.9; -64.3±5.1; -71.5±3.0; -64.9±4.6; -83.1±0.9 %, respectively) FDCMAPa (MAP=-6.5±2.0; -7.2±1.9; -7.0±2.5; -22.2±5.7; -28.3±2.7;-31.0±1.2; -31.6±1.4; -16.9±1.0; -28.4±2.7; -26.4±1.2 %respectively)/(HR=0.1±4.2; 1.9±2.2; -0.8±1.1; -18.4±17.8; -2.2±3.8; -28.2±18.1; -29.8±10.9; -29.8±3.1; -45.3±4.6; -51.7±3.6 %respectively). **Conclusions:** The results show that the fractions of *P. aculeata* induced hypotension, but in particular a decrease of heart rate, possibly by cardiac mechanisms. However, we needs a new studies for investigate the molecular pathways underlying this effects. KEY-WORDS: Cardiovascular effects; hypotension, bradycardic, *Pereskia aculeata*, SHR. **Financial Support**: CNPq, FAPEAL **References**: DUARTE, M.R.; HAYASHI, S.S. Estudo anatômico de folha e caule de *Pereskiaaculeata Mill.* (Cactaceae). Revista Brasileira de Farmacognosia, v.15, n.2, p.103-109, 2005. PINTO, N.C.C et al. Cytotoxic and antioxidante activity of *Pereskiaaculeata miller*. Pharmacology on-line v.3, p.63-69.2012. SOUZA et al.Antioxidant activity of ora-pro-nobis (*Pereskia aculeata Mill.*) leaves extracts using spectrophotometric and voltammetric assays in vitro. Bioscience Journal. V.30. p.448-457.2014. KAZAMA, C.C et al. Involvement of arginine-vasopressin in the diuretic and hypotensive effects of *Pereskiagrandifolia Haw.* (Cactaceae). Journal of Ethnopharmacology. v. 144, p.86-93.2012.

09.072 Anti-inflammatory effects and acute toxicity investigation of *Campomanesia xanthocarpa* **Berg**. **Seeds**. Scatolin M[1], Petry F, Dall'Orsoletta BB[1], Anzollin G[1], Guzatti JGG[1], Morgan LV[1], Alves BO[1], Scapinello J[1], Oliveira JV[2], Dal Magro J, Müller LG [1]Unochapecó, [2]UFSC

Introduction: Non-steroidal and steroidal anti-inflammatory drugs are the therapeutic classes used worldwide for inflammatory diseases treatment. These drugs are related to many side effects, such as gastrointestinal mucosal damage, ulcers and erosions, kidney damage, increased blood pressure, heart diseases, after the chronic use. In this sense, medicinal plants could represent a source of new anti-inflammatories with potentially fewer side effects. *Campomanesia xanthocarpa* is a plant species traditionally used in the treatment of diabetes, fever, hypercholesterolemia, obesity and urinary diseases. However, studies on its anti-inflammatory activity are still lacking. Therefore, the aim of this study was toinvestigatetheanti-inflammatoryactivityandpossibleacutetoxicityof*C. xanthocarpa* seeds extract. **Methods:** The extract was obtained by supercritical CO_2 extraction of *C. xanthocarpa* seeds (40°C, 250 bar) and its chemical composition was analyzed by GC/MS (Gas Chromatography Coupled to Mass Spectrometry). Male and female Swiss mice (25-35 g) were used in this study (Animal Research Ethical Committee-Unochapecó approval: #002/17). The formalin and carrageenan-induced paw oedema tests were used in order to investigate the anti-inflammatory activity of the extract. Mice locomotor activity was assessed by the open field test. Three doses of *C. xanthocarpa* extract (30, 60 and 120 mg/kg, p.o.) were tested and diclofenac potassium (50 mg/kg, p.o.) or indomethacin (20 mg/kg, p.o.) were used as positive controls. Vehicle groups were treated with saline plus 1% polysorbate 80. The acute toxicity study followed the OECD (Organization for Economic and Cooperation Development) 423 guideline. The results were analyzed by Unpaired *t*-test, one-way or two-way (repeated measures) ANOVA *post hoc* Student-Newman-Keuls, according to the experimental design. **Results:** GC/MS analysis revealed that β-caryophyllene is the major compound of the extract. *C. xanthocarpa extract* (60 mg/kg, p.o.) significantly ($p<0.01$) reduced the nociceptive behavior in these condphase of the formalin test and triggered a significant reduction in carrageenan-induced paw oedema up to 6 h after the algogenic stimulus ($p<0.05$) when compared to the group that received vehicle. The open field test revealed that *C. xanthocarpa extract*-treated group (60 mg/kg, p.o.) did not present alterations in the number of crossings, rearings, grooming sand fecal bolus when compared to the vehicle-treated group. Thus, the extract does not induce motor alterations that could interfere in the assessment of nociception. Mice acute treatment with *C. xanthocarpa extract* (2000 mg/kg, p.o.) did not elicit changes in the body weight gain, food consumption and relative organs' weight, neither caused animals' mortality. **Conclusion:** These results point to a promising anti-inflammatory activity of *C. xanthocarpa* seeds extract obtained by supercritical CO_2. The anti-inflammatory action may be related to its main constituent, β-caryophyllene. The administration (2000 mg/kg, p.o.) of*C. xanthocarpa* extract demonstrated that it is devoid of acute toxicity and can be classified in the OECD category 5 (safe) (LD50 > 2000 mg / kg, p.o.). **Acknowledgements:** PIBIC/FAPE - Unochapecó

09.073 Vasorelaxant effect induced by coumarins in the superior mesenteric artery. Brito DS[1], Vasconcelos DFSA[1], Alves QL[1], Araújo RSA[2], Barbosa Filho JM[3] [1]UFBA, [2]UEPB, [3]UFPB

Introduction: Hypertension is an important public health problem and despite the available therapeutic arsenal for blood pressure control, many hypertensive individuals remains with uncontrolled *hypertension.* Natural products have indubitably played a relevant source of new drugs and coumarins are chemical compounds found in many plants and they exhibit a wide variety of biological effects, among them are activities on the cardiovascular system. The aim of this study was to evaluate the vasorelaxant effect induced by 1,2-Benzopyrone (1,2BP), 3-Hydroxycoumarin (3HC), 4- Hydroxycoumarin (4HC), 6-Hydroxycoumarin (6HC), 7-Hydroxycoumarin (7HC), 6,7- Dihydroxycoumarin (6,7DHC), 6-Methoxy-7-hydroxycoumarin (6M-7HC) and 7,8-Dihydroxy-6-methoxycoumarin (7,8D-6HC) in normotensive in superior mesenteric artery. **Methods:** Male wistar rats (300-350g) were euthanized in CO_2 chamber and the superior mesenteric artery was isolated to subsequent studies of contractility. These arteries were segmented in rings (2mm) and suspended by cotton threads for isometric tension recordings in organ bath with Tyrode's solution at 37ºC, gassed with a 95% O_2 and 5% CO_2, under a resting tension of 0.75g. All experimental procedures were approved by the local animal use and care ethics committee – CEUA/ICS/ UFBA (130/2017). **Results**: Cumulative administration of coumarins (10^{-9} – $3x10^{-4}$M) in pre-contracted mesenteric artery rings with phenylephrine (1µM) induced vasorelaxation. In endothelium-intact rings (E+), 1,2BP induced vasorelaxation [$Effect_{3x10-4M}$ = 83, 3 ± 6, 4 (n=5)] that was significantly attenuated after removal of vascular endothelium (E-) [$Effect_{3x10-4M}$ = 58,8 ± 7 (n=5)]. Similar responses were obtained with 4-HC using E+ rings [$Effect_{3x10-4M}$ = 68, 6 ±13, 3 (n=5) compared with E- rings [$Effect_{3x10-4M}$ = 38, 2 ± 5,1 (n=5). On the other hand, the vasorelaxant effect induced by 3-HC [$Effect_{3x10-4M}$ = 91, 4 ± 6, 8 (n=5)] was not changed after endothelium removal [$Effect_{3x10-4M}$ = 98, 5 ± 3,3 (n=5)]. Similar effects were obtained with 6-HC in E+ rings [$Effect_{3x10-4M}$ = 98,4 ± 6,2 (n=5) and E- rings [$Effect_{3x10-4M}$ = 104 ± 6,4 (n=5)]; with 7-HC in E+ rings [$Effect_{3x10-4M}$ = 94,4 ± 6,8 (n=5), and E- rings [$Effect_{3x10-4M}$ = 100,4 ± 7,4 (n=8)]; with 6,7-DHC in E+ rings [$Effect_{3x10-4M}$ = 109,2 ± 7,6 (n=5) and E- rings [$Effect_{3x10-4M}$ = 102,7 ± 6,8 (n=5)]; with 6,7-DHC in E+ rings [$Effect_{3x10-4M}$ = 109,1 ± 3,5 (n=5)] and E- rings [$Effect_{3x10-4M}$ = 95, 3 ± 4,5]; and with 7,8D-6HC in E+ rings [$Effect_{3x10-4M}$ = 93,7 ± 3,8 (n=5)] and E- rings [$Effect_{3x10-4M}$ = 118,3 ± 10,3 (n=5)]. **Conclusion:** Our results suggest that coumarins induce vasorelaxation in the mesenteric artery, in an endothelium-independent way, except 1,2BP and 4-HC that have attenuated effects in the endothelium-denuded rings, suggesting that endothelial factors seem to contribute to the vasorelaxant effect of these compounds. Future experiments will be performed to elucidate the mechanisms involved in the vascular responses of these coumarins. **Keywords**: Coumarins; cardiovascular; mesenteric artery; vasorelaxant
Financial support: CNPq, CAPES, FAPESB and UFBA

09.074 Anti-HIV potential for *Bidens pilosa* (**Asteraceae**). Araújo AO[1], Carvalho SNPB[1], Ferreira RCS[1], Fonseca SA[2] [1]UFAL, [2]Cesmac

Introduction: Responsible for a global pandemic, the human immunodeficiency virus type 1 (HIV-1) is a retrovirus of the genus Lentivirus, belonging to the Retroviridae family. Being the cause of chronic disease, this virus infects cells that have the CD4 marker, reaching the blood, nervous and immune system where they find their main target, the helper T lymphocytes. According to The United Nations Joint Program on HIV / AIDS (UNAIDS), in 2017, 36.9 million HIV cases were reported worldwide, of which only 59% had access to antiretroviral therapy. Exclusive or complementary use of traditional herbal folk medicine is reported by HIV-positive individuals, especially by those in vulnerable situations, for immune reinforcement and to aid against HIV-related diseases. In addition to popular knowledge, this ancient custom also represents a potential bank of bioactive substances for the synthesis of new drugs. Bidenspilosa is a medicinal herb of the Asteraceae family that presents low toxicity levels. It occurs in the tropical and subtropical regions of the planet and there are reports of its usage against jaundice, malaria, treatment of bacterial and fungal infections, ulcers, allergy, hypertension and healing of oral wounds associated with HIV. Given this, our objective was to evaluate the anti-HIV potential of B. pilosa. **Methods:** B. pilosa specimens were collected at the Federal University of Alagoas (UFAL) Campus and were identified at Professor Honorio's Herbarium (MHN-UFAL), under the identification number 4740. To obtain the crude ethanolic extract (CEE), the plants were oven dried, crushed, macerated with 95% ethanol and concentrated in a rotary evaporator at 40 ° C. For the evaluation of antiretroviral activity, we used a quantitative immunoenzymatic colorimetric method (Reverse Transcriptase Assay, Roche, Germany), as described by Ferreira (2010). This method allowed us to evaluate the ability of the CEE of B. pilosa to inhibit HIV reverse transcriptase (RT) at a concentration of 100 µg / mL. **Results:** The CEE of B. pilosa leaves and stem inhibited the action of HIV RT by 45.42% while the control drug, efavirenz, inhibited 100% of the enzyme. A similar result was found for Bidensleucantha, which had its action associated with chalcone ester glycoside 9. However, the result of B. pilosa represents a non-nucleoside reverse transcriptase inhibitor (NNRTI) as it was able to inhibit the RT outside the cellular environment where they could not be triphosphorylated by cellular kinases. **Conclusion:** Bidenspilosa showed moderate inhibitory potential for one of the enzymes responsible for viral replication. As chalcones are one of the characteristic secondary metabolites of the genus Bidens, it is clear that its inhibitory potential can be further explored for drug synthesis and elucidation of popular use for HIV-associated patients. **References:** Benjamin, G. Rev. Fitos. 8(1): 53, 2013 Ezeonwumelu, J. Scirp. 9: 175, 2018 Ferreira, R. BC UFAL. 1, 2010 J. Nat. Prod. 60(3): 270, 1997 Rosa, M. RBAC. 48(4): 301, 2016 UNAIDS. Global AIDS update. 2017 The project did not receive a Financial Support and didn't involve the use of animals or humans, so it doesn't apply to the ethics committee license.

09.075 Comparison between the action of pyocyanin on the adhesion of *Escherichia Coli* **UFPEDA 224 and** *Staphylococcus Aureus* **UFPEDA 02**. Oliveira BTM, Dourado TMH, Silva ACL, Travassos RA, Vasconcelos UVRG UFPB

Introduction: Biofilms are complex microbial communities adhered to the different surfaces through the secretion of exopolysaccharides. These systems provide protection against extrinsic factors that can disrupt the cells integrity, for example, the immune system, heavy metal sand antibiotics, as well as it guarantees genetic permutation and the development of resistance mechanisms. The cellular recognition and adhesion on a certain conditioning substrate in the mainstage for the development of a biofilm (Costerton, Biofilms. v.1, p.1, 2004). The search for natural bioactive molecules that disturb cell adhesion may reveal potential antibiofilm agents. This work utilized pyocyanin, a phenazinic compound of known activity against bacteria and fungi and secreted exclusively by Pseudomonas aeruginosa strains (El-shouny, Int J PharmMedSci. v.1, p.1, 2011). It was studied against the adhesion of two pathogenic bacteria (Viana, IJERA. v.7, p.23, 2017). **Methods:** Under aseptic conditions, systems containing 50 mL of filtered water supplemented with 0.5% yeast extract and 0.2 mM of pyocyanin were prepared. Glass and dolomite coupons (1 cm^2) were submerged. Afterwards, 5 mL of a standardized suspension (≈10^8 CFU/mL) from E. coli UFPEDA 224 or Staphylococcus aureus UFPEDA 02 were added. After 48 h and incubation at 37°C, the coupons were scraped and the Most-Probable-Number/cm2 were determined. The test was performed in duplicate. **Results:** Compared to the control, there was a decrease in the number of cells adhered for both strains tested. The reduction for E. coli UFPEDA 224 on the dolomite and glass surfaces was 53.9±0.1 and 34.8±0.1%, respectively. For S. aureus UFPEDA 02, the observed reduction was 5.6±0.1 and 77.8±0.1% on the two materials. **Conclusion:** Pyocyanin showed potential as antibiofilm compound, especially against the Gram-negative. **Financial Support**: CNPq.

09.076 Antioxidant and anticholinesterase effects of *Syzygium cumini*. Borba LA[1], Wiltenburg VD[2], Santos LD[1], Negri G[3], Mendes FR[3] [1]Unesp, [2]UFABC, [3]Unifesp

Introduction: The *Syzygium cumini* (Mirtaceae), popularly known as jambolão, is mainly used as a nutritional food ingredient and as coadjutant in the diabetes treatment. Its fruits and other plant parts are rich in phenolic compounds and present potent antioxidant properties. Previous studies with different parts of the plant showed anti-inflammatory, antibacterial, hepatoprotective, hypolipidemic, hypoglycemic, and antipyretic properties, but there were few studies evaluating the effect of the species on central nervous system. The objective of this work was to evaluate the in vitro antioxidant capacity and the inhibitory effect of hydroalcoholic extract of *Syzygium cumini* (SC) leaves on acetylcholinesterase (AchE) and monoamine oxidase (MAO) enzymes, as well to evaluate its anxiolytic, antidepressant and antiamnesic effects in vivo. **Methods:** The antioxidant capacity was determined by the methods of DPPH scavenge and thiobarbituric acid reactive species, which measures the inhibition of lipoperoxidation in brain homogenates. To evaluate the inhibitory activity of AchE and MAOwe used microplate colorimetric/fluorometric assays based on Ellman's reaction and kynuramine deamination, respectively. The in vivo effect was evaluated in 3-months-old male mice that were treated with SC at doses of 50 and 300 mg/kg (via oral), water or a standard drug in the day of each test and were evaluated on open field (day 1), elevated plus maze (day 3), tail suspension (day 5) and passive avoidance test (PAT, days 8-11). In PAT the mice received scopolamine (1.5 mg/kg, except the negative control group) 30 min after the treatment with SC or water and 5 min later they were placed in the apparatus for the training phase. A shock of 1 mA and 1s was delivered on the animal's paw after crossing from light to dark compartment. The mice were evaluated 24h later, but then they received the extract or water 30 min before the test and scopolamine immediately after the shock (except animals that did not cross to dark compartment). The latency time to cross the door was evaluated again after 48 and 72h from the training session. On day 12 the animals were euthanized and the frontal cortex dissected and used to evaluate the ex vivo activity of AchE. The project was approved by CEUA UFABC (#650121128). **Results:** As expected, phenolic compounds were the main constituents found in the hydroalcoholic extract of SC. The extract showed antioxidant effect in DPPH assay (CE_{50}=82.8 μg/mL) and lipoperoxidation test (IC_{50}=1.27 μg/mL). The extract was also effective in inhibiting the AchE (IC_{50}=44.54 μg/mL) and MAO-A (IC_{50}=432.7 μg/mL).There was no difference among groups in distance traveled on open field, while the treatment with clonazepam (1.5 mg/kg, oral) increased the time spent on open arms in the elevated plus maze (306±219 vs 169±89 s) and imipramine (20 mg/kg, ip) decreased the time of immobility in the tail suspension test (40.7±33.3 vs 120.1±37.8 s) compared with control group. However, the SC did not have effectin these tests. In PAT the group of mice that did not receive scopolamine had higher latency to cross the door after 24h (260±80 vs 86±91 s) and 72h (300±0 vs 246±100 s) of the training session, when compared with the control group. There was a tendency of increase in the latency time in the group treated with the dose 300 mg/kg of SC, but it was not statistically significant. There was no difference among groups in the ex vivo AchE activity in the frontal cortex of mice treated with SC or water. **Conclusion:** Our results show that SC presents antioxidant, anticholinesterase and anti-monoamine oxidase in vitro effects, but failed in presenting anxiolytic, antidepressant and antiamnesic effect in vivo. This study didn't have any specific financial support.

09.077 Brazilian contribution to Toxinology: **A Pharmaceutical perspective**. Ferreira JPB, Pereira LL, Ovider IC, Sampaio TL UFC

Introduction: Brazil has a unique fauna and flora, with an immeasurable biological diversity. It is remarkable to realize the great amount of natural products that could be discovered, extracted and registered. Since the nineteenth century, Toxinology has been developed in the country, and with the contribution of several professionals, this Science has been noticed and studied. Nowadays such biodiversity is recognized as an important source of natural substances derived from animals, plants and microorganisms of interest in toxinology. Here, the first documented use of a substance was a poison called curare which came from the natives. Thus, the present work aims to study the Brazilian contribution based on articles about results in Pharmaceutical studies. **Methods:** This scientific study of literature review consists in an analysis of five articles taken off of the PubMed platform, published between 2005 and 2018, aiming to achieve a deeper knowledge about the theme. **Results:** In Brazil, according to the five articles used in this review, all of them were chosen because of their specificity in pharmaceutical conquers. Several studies have been carried out in the area of toxinology, such as some researches of the Center for Applied Toxinology (CAT) to obtain new vasodilator and antihypertensive molecules, anticoagulant factors, neurotoxins, bacterial enterotoxins and several products isolated from secretions of amphibian skin. Matthias. S.M. et. Al (2017) identified and isolated a protein called BaltDC from a very common species in Brazil, *Bothrops alternatus*. This protein showed a pronounced effect on platelet aggregation induced by ristocetin and epinephrine. In addition, these researchers also determined some possible functional groups present in the molecule that could be related to their mechanism of action, such as phosphate groups that bind to groups of the non-lipid portions of platelet membranes. Nencioni A.L.A. et. Al (2018) through a literature review demonstrated the main effects of neurotoxins from scorpions native to the Amazon and Northeast regions of Brazil. Among these, the blocking effect of sodium / potassium channels was highlighted, leading to possible problems in the heart muscle. **Conclusion:** Brazil is a land with an extended biological diversity and, therefore, an almost immeasurable chemical diversity. Among the thousands of known molecules are millions of others unknown, against this, we find ourselves in a universe of infinite therapeutic purposes, but for this to happen, it is necessary to overcome two barriers that limit us towards the development of new drugs: increased investment in research and development and the strengthening of clinical research in Brazil. Acknowledgments: Universidade Federal do Ceará. **Financial Support**: CNPq.

09.078 Evaluation of antiparasitary activity using microemulsion of hydroethanolic extract of *Genipa americana* **L.** Souza SBS[1], Estevam CDS[2], Santos SB[2], Mota KO[3], Santos LC[2], Silva AS[2], Santos PAL[2], Santos AM[2], Araújo BS[2], Texeira KCS[2], Dolabella SS[2] [1]Unit, [2]UFS, [3]UFAL

Introduction: Free-living parasites have aroused great interest recently due to the fact that some diseases are difficult to treat with substances available on the market. The genus Acanthamoeba is one of the most studied, as it is responsible for several pathologies in humans and animals, among them granulomatous amoebic encephalitis and amoebic keratitis [1,2]. *Genipa americana* L. popularly known as jenipapeiro belongs to the family Rubiaceae and has anti-inflammatory, antioxidant and antiangiogenic pharmacological properties. **Methods:** Photochemical determinations were performed to identify the groups of compounds present in *G. americana* Extract (Matos, 1997), and the identification of MTT cytotoxicity using fibroblasts. *Acanthamoeba castellanii* trophozoites were used for the antiparasitic evaluation of the hydroethanolic extract of *G. americana* L., the amoebas were kept in the Laboratory of Entomology and Tropical Parasitology of the Federal University of Sergipe in PYG medium at room temperature. For the assay, the trophozoites were in the logarithmic growth phase (8 x 104) and were distributed in 24-well cell culture plates containing 2 ml of PYG culture medium in each well, associated with different concentrations of hydroethanolic extract (1 mg / mL-^{1}, 3 mg / mL^{-1}, 4 mg / mL^{-1}, 5 mg / mL^{-1}.7 mg / mL^{-1} and 9 mg / mL^{-1}). For each concentration and positive control (amoebas and PYG culture medium) three replicas were made and the assay was repeated three times. After 24 hours of treatment the plates were placed on ice for 20 minutes, homogenized, and subsequently, a 12 µL aliquot was deposited in Neubauer's chamber for counting. The cell growth inhibition concentration (IC 50) was calculated by non-linear regression by the Microsoft Excel program, where (y = 23.514nm (x) + 23.218) and R2 = 0.93. Result: Inhibition of *A. castellanii* trophozoites growth after exposure of the plant sample was dependent on the concentration, i.e.as the concentration the cell increased, viability decreased. The following values of cell viability were expressed for the concentrations (1, 3, 4, 5, 6, 7 and 9 mg / mL^{-1}) of hydroethanolic extract, respectively: 72%, 58%, 46%, 42% 29% and 20%, and the positive control presented a cell viability of 100%. The concentration of 3 mg.mL^{-1} already presented a percentage of inhibition of 42% and the IC50 was 3.12 mg.mL^{-1}. The concentration of 9 mg.mL^{-1} showed a potential cellular inhibition effect, reaching 80%. The extract *G. americana* presented flavonoid, phenol, tannin and terpenoid metabolites, responsible for the biological activity of plants, including antiparasitic activity. This class has the ability to complex with soluble and extracellular proteins, as well as the bacterial cell wall. , 4. Fibroblast cytotoxicity analysis showed a toxicity of less than 10% indicating low toxicity.[3, 4]. **Conclusion:** The hydroethanolic extract of the *G. americana* weed incorporated in the microemulsion presents antiparasitic action against the protozoan *Acanthamoeba castellanii* andIt also showed no toxicity to fibroblasts due to the presence of flavonoids, phenols, tannins and terpenoids. **References**: 1.Marciano-Cabral F. Clin. Microbiol. Rev. 16, 273, 2003. 2.Schuster FL. Intern. J. Parasitol. 34, 1001, 2004. 3.Vunda SLL et al. J. Parasitol. 111, 961, 2012. 4.Coutinho MAS et al. J. Virt. Chem. 1, 241, 2009.

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09.079 Evaluation of toxicity and healing potential of the essential oil from the leaves and stem of *Eucalyptus saligna* **Sm**. (**Myrtaceae**) **in fibroblasts**. Pontes FL, Nascimento IRC, Ameida IT, Santos MC, Carmo JOS, Ferro JNS, Campessato EA, Moura IGD, Moreira MSA, Silva Neto GJ UFAL

Introduction: The genus Eucalyptus has been described as being widely distributed in regions with very distinct climatic conditions, from tropical to tempered regions, thus regions extremely humid to dry. In Brazil it is frequently found in the south and southeast regions, the main states are Parana, Santa Catarina, Rio Grande do Sul, Minas Gerais and Sao Paulo. Species of this genus have shown significant results for antinociceptive, anti-inflammatory, antibacterial and antifungal activities, revealing potential for similar activities, such as healing activity. Therefore, the present study aimed to investigate the possible toxic effect in vitro from the colorimetric method by methyl tetrazolium (MTT) and evaluate the healing potential of essential oil from leaves and stem of *Eucalyptus saligna* in experimental models in vitro by Scratch assay method. **Methodology:** The essential oil was obtained by hydro distillation and it was measured in a graduated tube for determination of content and after this process, the material was stored in Eppendorf, at a temperature of 4 ± 0,5ºC, next was subjected to gas chromatography coupled to mass spectrometer. Cell viability assay was performed by MTT method and the cell migration was evaluated by Scratch assay technique, with and without mitomycin treatment. **Results:** The chromatographic analysis and identification of the volatile compounds were identified, with p-cymene as the major component. The results showed that in MTT, treatments with OEES at concentrations of 1 and 10 µg/mL did not reduce the viability of fibroblasts, however at concentrations 100, 250 and 500 µg/mL, had reduce significantly the cell viability. In the Scratch assay it was found that treatment with 10 µg/mL induced 19.2% cell migration in fibroblasts compared to control group, while concentration of 1 µg/mL was not able to induce fibroblasts migration. At Scratch assay with mitomycin treatment, the migration was maintained, with a potential of 18.3% suggesting that OEES is able to induce independent migration of cell proliferation. **Conclusion:** The results obtained contribute to the research of natural products, besides adds significant data in the research for new healing drugs and corroborate popular use of this plant. Other studies will be necessary to evaluate the paper of p-cimeno in fibroblasts migration. **Keywords:** Healing potential; Pharmacology; Eucalyptus.

09.080 The hydroethanolic extract of vaccinium macrocarpon fruit (**cranberry**) **reduces cutaneous inflammation in mice**. Freire KS, Oliveira AS, Andrade AV, Carvalho MBT, Santana DG, Biano LS, Camargo EA UFS

Introduction: Inflammation is a protective response that leads to removal of lesion factors and restoration of tissue structure. Uncontrolled inflammation emerged as a pathophysiological basis for diseases that are found in the general population. Medicinal plants represent a therapeutic alternative in inflammatory processes and *Vaccinium macrocarpon* Aiton fruits (cranberry) are popularly used as synonym of health. A previous study from our group showed that this extract possesses flavan-3-ols, flavonol and anthocyanins as constituents, which are known as antioxidants (Santana et al.,Evid Based Complement Alternat Med, 9646937, 2018). The present study aimed to investigate the acute anti-inflammatory effects of the hydroethanolic extract of fruits of *Vaccinium macrocarpon* Aiton (HEVm) after topical administration. **Methods:** We used the ear inflammation induced by 12-O-tetradecanoylphorbol-13-acetate (TPA) in male Swiss mice (25-35 g, n=8/group) and the experiments were approved by the Institution´s Ethics Committee (CEPA/UFS 66/17). Animals were treated with TPA (1 µg/ear, dissolved in acetone, control group) applied with a pipette on the surface of the right ear, in the absence or presence of HEVm (0.3, 1 and 3 mg/ear, concomitantly to TPA) or dexamethasone (0.05 mg/ear). Acetone (20 µL) was topically applied to the left ear of all animals and served as a control. After 6 hours of induction the change in ear weight, the activity of myeloperoxidase (MPO, a marker for neutrophil infiltration) and the concentrations of IL-1β and malondialdehyde (MDA, a marker of lipid peroxidation) were measured in 8-mm sites of the ears. Statistical analysis of data was performed by ANOVA followed by Tukey´s test and $p<0.05$ was considered as significant. RESULT: Topical coadministration of HEVm (3 mg/ear) decreased ear weight (6.8±1.6 mg/site) in comparison to control group (17.9±0.8 mg/site, $p<0.001$). It also reduced the MPO activity (16.3±2.9 UMPO/site) in comparison to control group (37.0±3.4 UMPO/site, $p<0.01$) as well as theIL-1β concentrations (150±17 pg/mg of protein) when compared to control group (259±38 pg/mg of protein, $p<0.05$). Coadministration of dexamethasone also decrease these parameters in comparison to the control group (ear weight: 3.5±0.8 mg/site, $p<0.001$; MPO activity: 10.4±1.4 UMPO/site, $p<0.001$; IL-1β: 141±14 pg/mg of protein, $p<0.05$). Treatment with doses of 0.3 and 1 mg/ear did not affect these parameters. Besides, coadministration of HEVm decreased MDA concentration (0.57±0.07, 0.30±0.02 and 0.21±0.03 mmol/mg of tissue for 0.3, 1 or 3 mg/ear of HEVm respectively) when compared to control group (1.14±0.18 pg/mg of protein, $p<0.001$ for all treatments). **Conclusion:** The present study shows that HEVm produces anti-inflammatory effect after topical application in a model of cutaneous inflammation, which may be of importance for new therapeutic alternatives based on this extract. **Financial Support**: CAPES and CNPq. Keywords: Vaccinium *macrocarpon;* skin inflammation, oxidative stress.

09.081 Bioprospection of molecules with anticancer potential from microorganisms associated to the *Ascidian Euherdmania* sp. from the Ceará coast. Nogueira CN, Wilke DV, Florêncio KGD, Pinto FCL, Pessoa ODL, Canuto KM, Ribeiro PRV UFC

Introduction: Cancer is described as the abnormal proliferation of cells and their ability to migrate to other tissues or organs[1]. Being the second largest death cause worldwide, cancer constitutes a public health problem. Most treatments available in clinic are cytotoxic drugs, with undesirable side effects. Therefore, marine natural products pose as a source for new drugs, due to their chemical diversity[2]. **Methods:** In this context, the present work aimed to search for natural products with anticancer potential from the bacteria associated to the ascidian *Euherdmania* sp.. Initially the specimens were collected at Taiba beach, São Gonçalo de Amarante city, in the Ceara coast (3°30'22" S; 38°53'28") (Licences numbers: SISBIO 48522-2 and SisGen AC0781C). The animal colonies were cut in small pieces and cultivated in Petri dishes containing sea water-agar media supplemented with a nutritive aqueous extract of the *Euherdmania* sp. colonies. The microorganisms obtained were deposited in the laboratory's bank, MicroMarin, and coded as BRA-XXX. The organic extracts acquired from isolated bacteria cultured on A1 agar media with ethyl acetate. The antiproliferative activity of extracts was tested against HCT 116 cell line by the sulfohodamine B (SRB) assay at 50 µg/mL after 72h. Samples were considered active when they depicted growth inhibition > 75%. The active extracts were further tested in a wide range of concentrations to determine their potency and activity profile, cytotoxic. The most potent extract was chosen to undergo a bioguided fractioning, to isolate and identify the active compounds. **Results:** A total of 28 bacterial strains were isolated. 5 out of the 10 extracts produced were active (BRA-612, BRA-613, BRA-616, BRA-624 and BRA-632). The most potent extract was obtained from strain BRA-612, with an IC_{50} = 0,2 µg/mL. The bioguided fractioning lead to the isolation of 2 prodiginins. The majoritary compound was identified as heptyl prodigiosin and the other compound is under structure elucidation. Their inhibition concentration mean values were 0,04 µg/mL and 1,8 µg/mL respectively. **Conclusion:** *Euherdmania sp*. harbors an associated microbiota with a great biotechnological potential. The cytotoxic compounds produced by BRA-612 are members of the prodiginine family, with heptylprodigiosin as majority. Support: INCT Bionat. **Key Words:** Marine natural products, marine microorganisms, anticancer potential, prodiginins, heptyl prodigiosin, ascidians, *Euherdmania* sp.. [1]FOUAD, Y. A.; AANEI, C. Revisiting the hallmarks of cancer**. American journal of cancer research**, v. 7, n. 5, p. 1016–1036, 2017. [2]JIMENEZ, P.; WILKE, D.; COSTA-LOTUFO, L. Marine drugs for cancer: surfacing biotechnological innovations from the oceans. **Clinics**, v. 73, n. Suppl 1, 9 out. 2018.

09.082 Sulphated polysaccharide from *Acanthophora spicifera* **modulates oxidative stress and enhances defense mechanisms to prevent gastric damage in mice**. Nascimento FGD[1], Damasceno SRB[2], Calixto SIS[2], Pereira Júnior LDC[2], Lima GC[2], Soriano EM[3], Freitas ALP[2], Soares PMG[2], Souza MHLP[2], Medeiros JVR[4], Silva RO[5] [1]INTA, [2]UFC, [3]UFRN, [4]UFPI, [5]UFPE

Introduction: Marine algae are important sources of molecules bioactive, such as sulphated polysaccharides. Studies has showed that these molecules can to regulate digestive disorders involving intense inflammatory response and oxidative stress. Thus, the present study aimed to evaluate the gastroprotective effect of a polysaccharide extracted from marine algae *Acanthophora spicifera* (PAs) on ethanol-induced gastric damage in mice. **Methods:** Male mice Swiss (25-30 g; Protocol No. 068/14) were initially treated with PAs (0.3, 1, 3 and 10 mg/kg, orally). After 1h, gastric damage was provoked by oral administration of 100% ethanol (0.3 ml/25g). The control groups received only saline or 100% ethanol. One hour later, the animals were sacrificed, the stomachs removed, and the macroscopic gastric damage measured using Image J program from stomach pictures. Samples were removed and placed in formaldehyde 10% for histopathological analysis. To measure the oxidative stress, the levels of glutathione (GSH) and malondialdehyde (MDA) were determined in the gastric tissue. Hemoglobin (Hb) was evaluated as a hemorrhage marker and gastric mucus as defense mechanism. Results**:** Pretreatment with Pas significantly prevented($p<0.05$) and dose-dependent manner the macroscopic and microscopic gastric damage induced by ethanol (50.0±14.0 mm^2), with maximum effect at 10 mg/kg (12.4±8.2 mm^2). PAs at 10 mg/kg also significantly reduced($p<0.05$) the Hb concentration compared to ethanol group (0.410±0.040 versus 0.770±0.050 g/g tissue). In addition, PAs administration reversed the decreased GSH (154,0±13,5 µg/g tissue) and increased MDA (70.4±12.2 nmol/g tissue) in the gastric tissue altered by ethanol administration (107.4±12.7 µg/g tissue and 112.7±12.3 nmol/g tissue, respectively). PAs was also able to prevent the reduction of mucus levels, compared to ethanol group (1005.0±172.0 and 684.1±117.0 µg/g tissue, respectively).**Conclusions:** Sulphated polysaccharides from *A. spicifera* exerts gastroprotective effect one thanol-induced gastric damage by prevention of lipid peroxidation and enhances defense mechanisms of the gastric mucosa. **Financial support:** CNPq

09.083 **(-)-Myrtenol Decreases Orofacial Inflammation and Nociception in Mice**. Oliveira JP[1], Abreu FF[1], Bispo JMM[1], Soares AG[2], Cerqueira ARA[2], Santos JR[1], Costa SKP[2], Camargo EA[1] [1]UFS, [2]USP

Introduction: Orofacial pain is located at head and neck regions and is considered a healthy public problem that is present in 10-25% of the global population (Shetty et al., J Adv Clin Res Insights, 2;12-15, 2015). (-)-Myrtenolis a monoterpene found on essential oils of some plants and possesses anti-inflammatory and analgesic properties (Silva et al., FlavourFragr J, 29; 184-192, 2014) but its effect on orofacial nociception is unknown. We aimed to investigate the effect of (-)-myrtenol on orofacial inflammation and nociception in mice. **Methods:** Male Swiss mice were pre-treated with (-)-myrtenol (12.5, 25 or 50 mg/kg) or vehicle (saline +Tween 80 at 0.2%) or positive controls (morphine at 5 mg/kg and indomethacin at 10 mg/kg) 30 minutes before orofacial inflammation or nociception induction. Inflammation was induced by carrageenan (3%,i.m.) injection in masseter muscle. Six hours after induction, animals were euthanized and their tissues were collected for myeloperoxidase (MPO) activity and histological analyses on muscle and inIL-1β, TNF-αlevels on trigeminal ganglia and nucleus. In a second set of experiments, the orofacial nociception was induced by formalin injection in upper lip and the nociceptive behavior was measured during the first (0-5 min) and second phase (15-40 min) of test. Immediately after the test, animals were perfused, euthanized and their trigeminal ganglia were collected for immunohistochemistry for phosphorylated MAPK p38. Experiments were approved by the Institution´s Ethics Committee (CEPA/UFS 19/2018). **Results:** In the model of carrageenan-induced masseter inflammation, the treatment with (-)-myrtenol reduced MPO activity ($p<0.001$ for both 25 and 50 mg/kg) and total histological score (sum of edema, necrosis and necrosis scores) in masseter muscle ($p<0.05$ for 50 mg/kg)as did indomethacin ($p<0.001$) when compared with the vehicle-treated group. The treatment with(-)-myternol also reduced IL-1β levels in trigeminal ganglion (25 and 50 mg/kg; $p<0.01$ and $p<0.05$ respectively) and nucleus (25 and 50 mg/kg; $p<0.05$ and $p<0.01$ respectively) and TNF-αlevels in trigeminal ganglion(50 mg/kg; $p<0.01$ respectively), but not in trigeminal nucleus when compared with the vehicle-treated group. In the model of formalin-induced nociception, the treatment with myrtenol (12.5 mg/kg and 25 mg/kg) reduced nociceptive behavior on second phase of formalin test ($p<0.05$ and $p<0.01$ respectively), as did morphine ($p<0.001$) when compared with vehicle-treated group. Pretreatment with (-)-myrtenol (12.5 mg/kg and 25 mg/kg) also decreased phosphorylated MAPK-p38 staining in trigeminal ganglion ($p<0.05$ and $p<0.001$ respectively) but not in the trigeminal nucleus, when compared with the vehicle-treated group**. Conclusion:** (-)-Myrtenol causes anti-inflammatory and antinociceptive effects in orofacial region modulated by MAPK-p38 pathway in trigeminal ganglion and the regulation of cytokines in neural structures. **Financial support**: CAPES and FAPITEC.

09.084 Optimization of the process of extraction of polyphenolic compounds from the stem bark of *Mimosa tenuiflora* (**Willd**.) **Poiret**. Santos MA, Morais SA, Santos J, Soletti JI, Balliano TL UFAL

Introduction: The species *Mimosa tenuiflora* (Willd.) Poiret, popularly known as Jurema Preta, is an abundant plant in the northeast region of Brazil, in the Caatinga biome. Widely used in folk medicine to treat burns, wounds, inflammations and skin ulcers. It is reported in the literature for its antimicrobial, antifungal and antioxidant activity due to its metabolites, mainly to the polyphenolic compounds present in all parts of the plant, with higher concentration in the stem bark (Alvino Leite, 2015). This species is a potential producer of bioactive compounds that can serve as a basis for application in medicines and cosmetics. In order to obtain higher yields of total polyphenols (PT) in M. tenuiflora extractions, this work aimed to evaluate the extraction process, obtaining the best conditions of the active ingredients. **Methods:** *M. tenuiflora* bark was oven dried (55 °C) and crushed in forage. The extracts obtained by dynamic maceration used ethanol in different proportions (35 to 65% v/v) in water and different solvent volumes (20 to 50 mL), under constant temperature of 30 °C and 30 minutes of extraction. Rotational Central Composite Design was used to perform the extractions, with 3 repetitions at the center point. The extracts were then filtered, and the solvents were removed in a drying oven at 55 °C. The PT content was determined by the spectrophotometric method of Singleton et al. (1965) with modifications using Folin-Ciocalteau reagent and gallic acid (EAG) as standard. Results were treated by Statistica 10.0 software and compared by ANOVA, considering $p < 0.05$. **Results:** PT ranged from 188.18 to 353.31 mg EAG g of dry extract. The variable volume of solvent was significant, while the variable ethanol concentration was not significant. The coefficient of determination obtained showed an acceptable correlation of $R^2 = 0.7557$. The regression model was obtained: Total polyphenols (mg EAG/g of dry extract) = 386.7170-17.3975 V + 0.2538 V2 + 5.4998 C-0.0148 C2-0.0607 VC, where V = volume (mL) and C = ethanol concentration in water (%). The extracts obtained with 50% of ethanol in water presented higher PT contents in relation to the other concentrations of ethanol in water, being the lowest PT content obtained when using lower ethanol concentration (35%) and smaller volume of 20 mL, provided greater extraction of PT. Therefore, the best conditions were V = 20 mL and C = 50%, extracting 353.31 mg EAG/g of dry extract. **Conclusion:** This result indicates that *M. tenuiflora* is a promising source of polyphenolic compounds, with diverse applications in the pharmaceutical and medicinal fields. The paper supports promising tools for identifying and evaluating the biological quality of plant drugs obtained from extracts of *M. tenuiflora* and other medicinal plant species used in folk medicine in northeastern Brazil. References: ALVINO LEITE, I. Rev Biodiversity, v. 14, n.1, p. 22-30, 2015. SINGLETON, et al. American Journal of Enology and Viticulture, v.16, p.144-158, 1965. **Financial Support**: CAPES, Brazil.