08. Respiratory and Gastrointestinal Pharmacology

08.001 Antidiarrheal and spasmolytic activity of *Lippia origanoides* **essential oil**. Silva DS[1], Menezes PMN[1], Macedo CAF[2], Mourão MRN[1], Silva BAO[1], Barros ML[1], Lucchese AM[2], Ribeiro LAA[1], Silva FS, Palheta Júnior RC [1]UNIVASF, [2]UEFS

Introduction: The species *Lippia origanoides*, popularly known as "alecrim de tabuleiro", is popularly used in the treatment of various diseases including gastrointestinal disorders, such as stomach pains and indigestion, however it is necessary to investigate from the evidence confirming its popular use or not. **Methods:** The essential oil of the species *Lippia origanoides* (LOO) was supplied by (UEFS). Animals: *Cavia porcelus* males weighing between 300 and 500g were used, and *Mus musculus* albino males of 6-8 weeks and weighing between 25 and 35g, with light/dark cycle of 12h and water and feed *ad libitum*, with fasting of 18h before the experiments. All procedures were approved by the Local Ethical Committee (CEUA-*UNIVASF* 0001/010617).For the study of the possible relaxing activity of LOO in the smooth muscle of ileum isolated from guinea pig and its mechanism of action was performed according to (MARTÍNEZ, JOUR of ETHNO, 20, 58, 2017) with modifications, for the contraction the agents carbacol (Cch), histamine (HIS) and KCl were used, after 5 minutes the LOO was cumulatively added at 0.3, 1, 3, 9, 27, 81, 243 and 729 µg/mL at 5 minute intervals. In the investigation of the effect of LOO on the diarrhea induced by castor oil in mice, established by (RAO, PLAN MED, 63, 146, 1997), with modifications, were treated with cremofor 3% in H2O 10 mL/kg (w/v), loperamide 20 mg/kg and LOO at doses of 100, 200 and 400 mg/kg, all orally. **Results:** *In vivo* test results show a dose-dependent biphasic effect, at 100 mg/kg LOO there was an increase in diarrheal secretion, and at doses of 200 and 400 mg/kg decreased intestinal secretion. Already in the *in vitro* results with Cch-induced contraction, the LOO showed a tetraphasic effect, with an increase in the initial contraction of 0.3-3 µg/mL, relaxation in 9-27 µg/mL, increased tone and frequency of 81 µg/mL, with a new relaxation and decrease in the contraction frequency of 243-729 µg/mL LOO. The contractions at 0.3-3 µg/mL LOO were inhibited in the presence of CsCl 5 mM/mL, 4-aminopyridine 0.3 mM/mL, glibenclamide 10 µM/mL and Tetraethylammonium 1 mM/mL but also no relaxation in different ways, up to the 27 µg/mL LOO dose with the contraction peak isolated at the concentration of 81 µg/mL LOO. In the presence of L-name and 1H-[1,2,4]oxadiazol[4,3,-a] quinoxalin-1-one 10 µM/mL the relaxation observed between 9 to 27 µg/mL LOO is inhibited. The contraction event at the concentration of LOO 81 µg/mL LOO was increased in an isolated and clear manner in the presence of the aminophylline 100 µM/mL. Conclusion: The contraction of 0.3 to 3 µg/mL has a possible relationship with the KIR and KV channels. Relaxation between 9 to 27 µg/mL is possibly dependent on the Katp and Kca channels associated with NO and cGMP dependence. And the contractive effect of LOO at 81 µg/mL depends on the presence of AMPc, PKA and phosphorylation of intracellular Ca^{2+} channels. New tests will be performed in the absence of Ca^{2+} and other blockers in order to confirm the hypothesis. **Financial support**: CAPES, UNIVASF.

08.002 Evaluation of immunoregulatory, antioxidant and anti-secretory activity of estragole in the gastric mucosa in animals' models. Alves Júnior EB[1], Serafim CAL[1], Pessoa MLS[1], Vieira GC[1], Jesus TG[1], Silva LMO[1], Silva AO[1], Gomes TGC[2], Araújo Júnior RF[2], Batista LM[1], Vasconcelos RC[2], Araújo AA[2] [1]UFPB, [2]UFRN

Introduction: Estragole is an aromatic organic compound belonging to the class of phenylpropanoids derived from cinnamic aldehydes present in essential oils of plant species such as *Ravensara anisate* (madeira), *Ocimum basilicum* (manjericão/alfavaca) and *Croton zehntneri* (canelinha). Pharmacological studies report its gastroprotective activity of estragole. Therefore, the present study aimed to evaluate of immunoregulatory, antioxidant and anti-secretory activity of estragole in the gastric mucosa in animals' models. **Methods:** For the experimental proceedings with animals, it was used male Wistar rats (Rattus norvegicus) weighing 80-250g. From the ethanol model, tissue fragments of stomachs approximately 2 cm^2 in length and three stains were made: hematoxylin and eosin (HE), periodic acid of Schiff (PAS) and blue of toluidine (ATO) (BEHMER, O. A. EDART, v. 1, p. 341, 1976) and levels of antioxidants and cytokines. The antioxidants evaluated were reduced glutathione (GSH) (FAURE, P. Birkhäuser Basel, v.1 p. 237, 1995.), malondialdehyde (MDA), myeloperoxidase (MPO) (KRAWISZ, J. E. Gastroenterology, v. 87, p. 1344, 1984.)and glutathione peroxidase (GPx). The cytokines evaluated were interleucin-1 beta (IL-1β), tumor necrosis factor alpha (TNF-α) and interleucin-10 (IL-10), inflammatory proteins were expressed by immunohistochemistry, such as cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS).For the evaluation of anti-secretory activity in the gastric mucosa, animals (n=10) were submitted to pylorus ligature and treated (v.o and i.d) with tween 80 5% (negative control), cimetidine 100 mg/kg (positive control) or estragole (250 mg/kg) (SHAY, H. Gastroenterology, v. 5, p. 43, 1945.), Area of ulcerative lesion were determined by ulcerative lesion index (ULI). The assay was considered significant when $p<0.05$. **Results:** Estragole the most effective dose (250 mg/kg) improved the histological parameters evaluated. Its increased levels of reduced glutathione (GSH) and glutathione peroxidase (GPx) and reduced levels of malondialdehyde (MDA) and myeloperoxidase. It reduced the levels of IL-1β, TNF-α and inducible nitricoxide synthase (iNOS) expression, and increased levels of IL- 10 andcyclooxygenase 2 (COX-2). Pylorus ligation (i.d) treatment with estragol (250 mg/kg) decreased the volume of the gastric juice. **Conclusions:** Thus, it was possible to conclude that the estragole presents immunoregulatory, antioxidant and anti-secretory activity in the gastric mucosa in animals models. **Acknowledgment**: CAPES/UFPB/PgPNSB/IPeFarM. Ethics Committee on Animal Use (UFPB): Protocol number 134/2017.

08.003 Involvement of Vanyloid Transient Potential Receptor 4 (TRPV4) in ethanol induced gastric lesion in mice. Pacheco G[1], Oliveira AP[1], Nolêto IRSG[1], Chaves LS[1], Iles B[1], Lopes ALF[1], Araújo AKS[1], Santos ES[1], Sousa FBM[2], Medeiros JVR[1] [1]UFPI, [2]UniNassau

Introduction: Transient potential receptors (TRPs) are implicated in a variety of cellular functions. Among them, we can highlight the recipients of transient vanilloid potential (TRPV), which have already been associated with the development of ulcers caused by the use of indomethacin, acetic acid and ethanol (DELGADO, Nature. v.396, p.285,2019). The transient potential receptor 4 (TRPV4), a member of the TRPV subfamily, is morphologically and functionally expressed in the gastric epithelium and has also been associated with gastrointestinal tract disorders (ZHANG, Neuroscience. v.311, p.166, 2015). However, there are no studies demonstrating the association of this receptor with the development of gastric ulcers. Therefore, our study aimed to evaluate the possible participation of this receptor in the development of gastric ulcers. **Methodology:** Animal models of gastric lesion induction using ethanol using Swiss mice weighing between 25 and 30 g were used in groups of 5 animals. The negative control group received only saline administration (0.9%) and the positive control only administration of 50% or 30% ethanol. In two experimental groups, TRPV4 antagonists associated with 50% ethanol (0.5ml / 25g, v0) were administered, where one group received Ruthenium Red (doses: 0.03, 0.1 or 0.3 mg / kg, ip), one non-specific antagonist, and the other group GSK2193874 (doses: 0.1, 0.3 and 0.9 mg / kg, ip), a specific antagonist. In addition, one group of animals received administration of GSK1016790A (0.9 mg / kg, i.p), TRPV4 agonist, and soon after 30% ethanol (0.5ml / 25g). One hour after the administrations the animals were euthanized, and a laparotomy was performed to remove the stomach that was opened around the greater curvature, stretched and photographed for macroscopic analysis of the gastric mucosa, through the program Image J. After this analysis the best dose of the TRPV4 antagonists was selected for the remaining tests. Stomach samples were withdrawn for histopathological evaluation, dosages of malondialdehyde (MDA), superoxide dismutase (SOD) and reduced glutathione (GSH). Results**:** We observed that TRPV4 blockade promoted macro and microscopic gastroprotection in the ethanol induced injury model, leading to a decrease in some parameters such as hemorrhage, cell loss and edema, in addition to a significant increase ($p < 0.05$) concentrations of SOD and GSH and the reduction the concentrations of MDA ($p < 0.05$) in the gastric mucosa, demonstrating a decrease of oxidative stress caused by alcohol. On the other hand, the use of the TRPV4 agonist showed, through macroscopic analysis, an exacerbation of the lesion area ($p < 0.05$) when compared to the group that received 30% ethanol. **Conclusion:** We may suggest that TRPV4 activation is involved in the ethanol induced gastric injury process, and that the use of TRPV4 blockers may in the future be a therapeutic alternative for the treatment of gastric ulcers. **Support:** CAPES/CNPq/FAPEPI/UFPI. **License number of ethics committee:** Ethical Committee on Animal Use/UFPI:Protocol nº 003/19

08.004 Assessment upon the effects of the ethanolic extract from the leaves of *Annona muricata* **on the mus musculus gastrointestinal tract**. Matos RPS[1], Sousa JA[2], Santos F[2], Souza ORB[3], Ferreira LVA[2] [1]Facid, [2]UNIFSA, [3]UFPI

Soursop (*Annona muricata*) is part of the Annonaceae family, which is a species commonly used for treating diarrhea, being *A. muricata* the most important one. *A. muricata* is described to have anticarcinogenic, gastroprotective, sedative and liver protector properties. Conversely, the mechanisms of its anti-diarrheic activity have never been explored. Therefore, the following study aimed to assess the possible effects of ethanolic extract from the *Annona muricata* leaves on the *Mus Musculus* gastrointestinal tract. To obtain the ethanolic extract, a 1:5 p/v (1g of dried leaves for each 5 mL) proportion of 70% ethyl alcohol was used. Two different protocols were used: The first procedure waste castor oil-induced diarrhea, in which the mice were selected and divided into 4 groups of 6 animals each. The second procedure was the intestinal transit test, measured by the use of active carbon, where it was used 3 groups of 6 animals. A total of 42 Swiss male mice was used. This study was approved by the Ethics Committee of Experimental Animals from the Santo Agostinho University, protocol 9353/16. In the first experimental protocol, *A. muricata (100 mg/kg)* inhibited the secretory effect caused by the castor oil ($p<0,0001$) and also reduced the flow and amount of feces, presenting similar effect to the positive control loperamide (5 mg/kg). In the second experimental protocol, the percent distance reached by the active carbon in the small intestine was not statistically significant ($p<0.05$, *A. muricata* [100 mg/kg, 49.10%] versus the vehicle-treated group [0.1mL/10g, 47.12%]). Therefore, the ethanolic extract from the *Annona muricata* leaves reduces diarrheic secretion induced by the castor oil with no effect on the intestinal transit. Keywords: Soursop, anti-diarrhoea, intestinal motility, *Mus musculus*. **Financial Support**: UNIFSA **References**: SANTOS, D. R. D.; SILVA, L. R.Clinical Pharmacology of laxatives and antidiarrheals. Pharmacology Journal. 8.ed. Rio de Janeiro: Guanabara Koogan, p. 888-895, 2010. SOARES, E. R. Photochemical Study and Biological Activity of *Bocageopsis Pleiosperma* Maas (Annonaceae). 2014. 215p. Master's Dissertation – Federal University of Amazonas. Chemistry Departament. Postgraduate Program in Chemistry. Manaus, 2014.

08.005 Evaluation of the antioxidant and gastric antiulcerogenic activities of the hydroalcoholic extract and leaf fractions of *Solanum stipulaceum* **Roem & Schult**.
Lima CAA[1], Oliveira DF[1], Silva AS[1], Lima RS[2], Santos JL[1], Dias AS[1], Santos ALLM[1], Ferro JNS[3], Shan AYKV[1], Araújo BS[1], Barreto E[3], Silva MS[2], Batista JS[1], Santana AEG[3], Estevam CDS[1] [1]UFS, [2]IFS, [3]UFAL
Introduction: Knowledge about medicinal plants derived from popular use is useful for bioprospecting, as it contributes to the selection of plants that present pharmacological activity. Ethnobotanical studies showed that the plant most salient the residents of Vila Capim, Arapiraca-AL for the treatment of gastric ulcer was *Solanum stipulaceum* Roem & Schult (Sacatinga).[1] Therefore, this work evaluated the antioxidant, antiulcerogenic, protective redox and cytotoxicity activities of the hydroethanolic extract and leaf fractions of *S. stipulaceum*. Material and method: The hydroethanolic extract (EHE) was obtained by maceration and fractionated by liquid-liquid extraction in fractions: hexane (FH), chloroform (FC), ethyl acetate (FAE) and hydromethanol (FHM). In vitro antioxidant activity was measured by the DPPH free radical sequestration method. The cellular toxicity of the samples was evaluated using J774 macrophages at concentrations of 10, 50 and 100 µg/mL by the MTT assay. In vivo antiulcerogenic activity was investigated using the ethanol-induced acute ulcer model (EIAUM), using male Wistar rats (n = 7) at doses of 100, 200 and 400 mg/kg for EHE, 200 mg/kg for the fractions and 50 mg/kg for ranitidine given orally. Afterwards, ex vivo protective redox activity was assessed with the plasma and liver of these animals using the TBARS assay. Statistical differences were determined by one-way ANOVA followed by the Bonferroni test ($p < 0.05$). All experimental protocols were approved by the UFS Animal Research Ethics Committee under number 05/15. **Results:** The sequestering activity was 77.30%, 77.89% and 73.39% for EHE, FAE and FC respectively. Treatment with EHE inhibited the ulcer in 61.00% and 88.32% in doses of 200 and 400 mg/kg respectively, while FC, FAE and FHM in 96.80%, 62.47% and 58.09% at 200 mg/kg, respectively. Oxidative stress was reduced in the plasma (59.09%) and in the liver (44.14%) with the EHE at dose 400 mg/kg. Regarding the fractions, FC and FAE at 200 mg/kg reduced plasma oxidative stress by 44.44% and 36.86%, and in the liver by 51.57% and 35.53%, respectively. FHM at 200 mg/kg reduced oxidative stress only in the liver (47.79%). The cytotoxicity test showed that EHE and fractions at concentrations of 10 and 50 µg/mL ($p > 0.05$) were non-toxic, maintaining cell viability at 65%, while in the concentration of 100 µg/mL the percentage viability was lower. Conclusion: This study showed that the extract and fractions have antioxidant activity *in vitro* and *ex vivo*, antiulcerogenic effect in vivo and low cytotoxicity up to 50 µg/mL. Financial support: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) **Reference:** 1.Lima CAA, et al. Acta Bras. v. 1, n.1, p. 1. 2017.

08.006 Constituents of the gastroesophageal refluxate interfere with the contractility of rat esophagus. Gadelha KKL, Carvalho EFD, Oliveira DMN, Silva KL, Silva AAV, Camilo KLA, Silva CAO, Pinheiro CG, Magalhães PJC UFC

Introduction The upstream flow of gastric content into the oesophagus commonly causes symptoms with or without organ damage, a pathological condition that is known as gastro-oesophageal reflux disease (GORD; Gyawali et al., 2017). In humans, lesser contractility of the oesophageal body was concomitant to the occurrence of reflux symptoms. Abnormal motility patterns in the oesophageal body such as fragmented peristalsis, ineffective motility or absence of oesophageal contractility was found in patients with GORD (Oh et al., 2006). **Aim/Methods** In the present study, the effects of an acute exposure of rat esophagus to a content that simulates gastroesophageal reflux were evaluated using in vitro methods on isolated oesophageal tissues. **Results** After 30 min of luminal exposure to an acid pH solution containing pepsin and taurodeoxycholic acid (TDCA), isolated strips of the rat esophagus mounted following the orientation of the circular or longitudinal muscle layers were less responsive to stimulus induced by carbachol (CCh) in comparison to strips exposed to neutral solution (pH 7.4). Alone, the acid was unable to change the contractile response, which decreased only when the acid solution contained pepsin or, even more, when it contained a mixture of pepsin and TDCA. **Conclusion** The findings support the notion that oesophageal luminal exposure to acid solution containing pepsin and TDCA causes contractile dysfunction on rat oesophagus. It is probable that bile acid exerted a major influence on the decreased contractility. **References**: Gyawali CP et al. International GERD Consensus Working Group.Classification of esophageal motor findings in gastro-esophageal reflux disease: Conclusions from an international consensus group. Neurogastroenterol Motil., 29, e13104; 2017. Oh DSet al. The impact of reflux composition on mucosal injury and esophageal function. J Gastrointest Surg., 10(6):787-96; 2006. **Financial support**: Conselho Nacional de Desenvolvimento Cientifico e Tecnológico (CNPq), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) e Fundação Cearense de Apoio ao Desenvolvimento Científico e Tecnológico (FUNCAP) ofBrazil.

08.007 Evaluation of the gastroprotective and antioxidant effects of Kefir on gastric lesions induced use of anti-inflammatory. Côco LZ[1], Barboza KRM[1], Aires R[2], Pimenta ABT[1], Vasquez EC[1], Pereira TMC[1], Campagnaro BP[1] [1]UVV-ES, [2]UFES
Gastric ulcers are defined as lesion in the epithelial, mucosa and in the muscle tissue of the stomach. An important injury factor is the consumption of nonsteroidal anti-inflammatory drugs (NSAIDs). Kefir is an antioxidant probiotic that presents several benefits, being one of its main actions the decrease of reactive oxygen species (ROS).In our study, we evaluated the gastroprotective effect of Kefir in an animal model of gastric ulcer induced by NSAID. We used Swiss mice (~30g) divided into 3 groups: Vehicle (milk - pH 5, 3 mL/ 100g), Lansoprazole(30 mg/kg) and Kefir milk 4% (w/v, 0.3 mL/100g). After 14 days of treatment the animals were fasted for 12 h for indomethacin (40mg/kg, gavage) administration and, after 6h, animals were euthanized. Blood, gastric juice and stomach were collected for pH determination, lesion are a calculation, ROS production and cellular apoptosis quantification in isolates gastric cells. Genotoxicity was evaluated in blood cells. Data are reported as mean±SEM and one-way ANOVA and Tukey's test were used. Level of significance was fixed in $p<0.05$. All the protocols were approved by Animal Ethics Committee-UVV (#427-2017). Our results showed that the use of indomethacin increased the percentage of gastric lesions in vehicle group (2645 ± 477.2%), where as in animals that receiving lansoprazole (2153 ± 508.5%) and Kefir (1465 ± 308.9 %) the lesions were attenuated. There was a decrease in the lesion area in the groups treated with Kefir (1 ± 0.2357) and lansoprazole (1.55 ± 0.3452) when compared with vehicle group (2.3±0.3667). Regarding the pH of the gastric juice of the animals, there was no difference between the groups. The animals treated with Kefir showed a decrease in the production levels of ROS O2- (1635 ± 93.45 a.u.), (1068 ± 57.14 a.u.) and ONOO- /OH (744.3 ± 27.19). Lansoprazole and vehicule groups presented an increase in the radicals O2- (1707 ± 100.8 a.u.; 3235 ± 105.9 a.u.), H2O2 (1745 ± 64.07 a.u.; 1719 ± 76.79 a.u.) and ONOO-/OH (1123 ± 26.81 a.u.; 1433 ± 55.76 a.u.). In the Kefir group there was an increase in NO level (480.7 ± 18.97 a.u.) when compared to animals treated with lansoprazole (197 ± 5.183 a.u.) and vehicle group (167.5 ± 7.843 a.u.). There was an increase of apoptotic cells in the vehicle group (24.63 ± 2.11%) compared to animals that received Kefir (7.40 ± 1.12%) and lansoprazole (11.5 ± 0.99%). The viability of gastric cells increased in the Kefir group (91.64 ± 1.245%) compared to lansoprazole (87.41 ± 1.403%) and vehicle (74.4 ± 2.259%). The vehicle group there was a greater fragmentation of blood cell DNA (30.44 ± 1.295%), compared to the Kefir group (10.78 ± 2.694%) and lansozprazole group (20.54 ± 2.355%). Kefir was able to prevent gastric lesions by decreasing ROS and simultaneous increase in NO, proving the antioxidant and gastroprotective effects of this symbiotic. This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) – Finance Code 001.

08.008 Effect of pyridostigmine and donepezil treatment on blood pressure and gastric emptying in hypertension rats induced by L-NAME. Telles PVN[1], Cavalcante GL[1], Santos RB[1], Lima JVO[2], Costa EAS[1], Alves Filho FC[1], Sabino JPJ[1], Silva MTB[1] [1]UFPI, [2]UNIFSA

Introduction: We have recently shown that 2K1C renovascular hypertension promotes an increase in gastric retention, a phenomenon prevented by physical exercise and inhibition of the renin angiotensin system (LIMA, E. B. S. Life Sci, v. 210, p.55, 2018). Inhibition of acetylcholine sterase has been proposed as a treatment for cardiovascular problems (LARATO, R. M. Am J Hypertens, v. 28, p 1201, 2015). In this current study, we investigated the effect of pyridostigmine (PYR) or donepezil (DNZ) on blood pressure (BP) and gastric emptying (GE) of hypertension (HSA) rats induced by L-NAME. **Methods:** We used male rats Wistar (250-300g) divided into: I) Control (Ctrl); II) Hypertension-L-NAME (HSA/L-NAME); III) HSA + PYR; IV) HSA + DNZ. The HAS was induced by L-NAME (70mg/kg/ day for 14 days p.o) according to (DURAND, M. T.Am J Physiol Regul Integr Comp Physiol, v. 300, p. R418, 2010). The treatment with PYR (22 mg/kg/day, p.o) or DNZ (1.4 mg/kg/day, p.o) was performed from the 2nd to the 14th day concomitantly with the induction of HSA. The HAS was confirmed by indirect measurement of systolic blood pressure (SBP) by means of caudal plethysmography and was considered HAS rats with BP ≥ 140 mmHg. SBP recording was performed before induction (baseline,2nd, 7th and 14th day after induction. After the treatment period, the GE was evaluated through the colorimetric method of fractional red phenol recovery at the postprandial 10-min time according to (REYNELL, PC J Physiol, v. 131, p. 452,1956). The data were expressed in mean ± SEM with significant $p<0.05$ values. The work was approved nº 495/18. **Results:** Compared to the control group, a significant increase was observed ($p<0.05$) in rats L-NAME treated (113.7 ± 1.9 *vs*. 178.3 ± 3.3 mmHg). The treatment with HSA-PYR or HSA-DNZ induced by a significantly decrease ($p <0.05$) in hypertension compared to the L-NAME group (178.3 ± 3.3 *vs* 136 ± 2.6 and 134.0 ± 4.2 mmHg). A significant increase ($p<0.05$) in gastric retention of L-NAME rats was observed, compared to control rats (68.2 ±1.2 % *vs* 30.6 ±1.1%). In addition, it was found that in the HSA-PYR or HSA-DNZ groups there was a significant decrease($p <0.05$) in gastric retention compared to L-NAME rats(50.3 ± 0.8 and 35.8 ±0.6% *vs* 68.2 ±1.2%).**Conclusion**: Treatment with PYR and DNZ promoted an improvement in L-NAME- induced hypertension. In addition, the treatment was effective in reversing the increase in gastric retention in hypertensive rats. Thus, it is suggested that the administration of anticholinesterases may be useful in the treatment of cardiovascular and gastrointestinal disorders. **Financial Support**: CNPq; CAPES. Keywords: Hypertension; gastric emptying; anticholinesterase.

08.009 Evaluation of the gastroprotective activity of hecogenin acetate in rodents.
Sousa AJC[1], Pereira EPS[1], Silva Batista WWB[1], Sousa JSLL[1], Soares DSDC[1], Vieira da Silva F[1], Quintans-Júnior LJ[1], Meneses Oliveira RC[1] [1]UFPI, [2]UFS
Introduction: Peptic ulcers are lesions in the gastric and duodenal mucosa generated by an imbalance between the protective factors (gastroduodenal mucus secretion, bicarbonate production, adequate blood flow) and lesions (excess of pepsin or hydrochloric acid). The cause can be for several factors, from environmental elements (alcohol and nicotine) to genetic factors (Vômero, N.D. ABCD Arq. Bras. Cir. Dig. v. 27, p.298, 2014). Some therapies have been used in the therapy of peptic ulcers, but some medications are associated with adverse effects: hypersensitivity, vitamin B12 and iron deficiency. In this way, studies are developed in search of more effective alternative therapies and with fewer adverse effects (Rosa, R.L .Inflammopharmacology, 2017). Thus, the objective of the present study was to evaluate the gastroproprotective activity of hecogenin acetate (HA) in different models of gastric lesions in rodents. **Methods:** Initially, the gastroprotective activity of HA was evaluated in gastric lesions induced by absolute ethanol (Robert, A. Gastroenterology, v. 77, p. 433, 1979) and acidified ethanol (Mizui, T. Jpn. J. Pharmacol. v. 33, p. 934, 1983), in which swiss mice were pre-treated orally with HA (2.5, 5, 10 mg/kg) and (5, 10 and 20 mg/kg), respectively, and carbenoxolone (CARBEX 100 mg / kg). After 1 h, absolute ethanol and acidified ethanol were administered (0.2 ml/animal), respectively. After 30 min of absolute ethanol administration and 1 h of acidified ethanol, animals were euthanized and the percentage of the ulcerated area of gastric lesions was determined. For the ischemia and reperfusion-induced gastric lesions model, Wistar rats were used, in which they were orally pretreated with HA (5, 10, 20 mg / kg) and N-acetylcysteine (NAC 200 mg/kg). After 30 minutes, they were anesthetized. They were then submitted to 30 minutes of ischemia followed by 1 hour of reperfusion. Posteriorly, the percentage of the ulcerated area of gastric lesion was determined (Bhargava, K.P. Eur. J. Pharmacol. v. 22, p.191, 1973). **Results:** HA (2.5, 5 and 10 mg / kg) and (5, 10 and 20 mg/kg) significantly reduced ($p < 0.05$) the lesion area 94.5%; 61.2%; 67.3%, and 39.6%; 89.7%; 57.1%, respectively, when compared to the control group, in the respective absolute and acidified ethanol model. CARBEX (100 mg/kg) significantly reduced ($p < 0.05$) the gastric lesion 72.2% and 84% in the absolute and acidified ethanol model, respectively. In gastric lesions induced by ischemia and reperfusion, HA (5; 10 and 20 mg/kg) significantly reduced ($p < 0.05$) the lesion area 84.8%; 71.7%; 92.2%, respectively, when compared with the control group. NAC (200 mg/kg) significantly reduced ($p < 0.05$) the 78% gastric lesion, when compared to the control group. CONCLUSION: Given the results presented, HA has a gastroprotective potential demonstrated by the decrease of the gastric lesion. **Financial support**: PPGFARM / UFPI / FAPEPI/ CAPES Ethics Committee for Animal Experimentation (CEEA / UFPI nº 516/2018).

08.010 Investigation of spasmolytic and expectorant activity of vanillin. Silva BAO, Silva FS, Menezes PMN, Silva DS UNIVASF

Introduction: Vanillin (VAN) is major component of natural vanilla (*Vanilla* spp. Plants) extract which is native to tropical rainforests located from Mexico to Brazilis. VAN is a aldehyde that has demonstrated several pharmacological activities: anti-inflammatory, anxiolytic, antinociceptive, relaxingin porcine coronary arteries. **Objetives:** The aim of this work was to evaluate the espasmolytic and expectorant properties of vanillin in trachea isolated of rat (Rattus norvegicus) and phenol red secretion model in mice (*Mus musculus)*. **Methods:** The experimental protocols were conducted with strict adherence to the Ethical CEUA/UNIVASF (protocol number 0003/080716). Rat isolated trachea (n= 5) was incubated in 10 ml chambers in an organ bath system filled with a Krebs-Henseleit' solution at 37°C and constant oxygenation by 1h and tension settled for 1g. Cumulative concentrations of VAN (10^{-7} M a $3x10^{-3}$ M) were added after the induction of the contraction by 10 µM carbachol (Cch), 60 mM KCl or basal tônus in order to investigate the spasmolytic effect. Relaxations are expressed as a percentage of the contractions to Cch or 60 mM KCl. In the study expectorant activity evaluation, mice were randomly divided into 4 groups of 4-6 mice each and treated orally with the saline solution(negative control – CN), VAN 100 mg/Kg (VAN-O), ambroxol 120 mg/Kg (AMB) and VAN 100 mg/Kg injected intraperitoneally (VAN-IP). After 30 min, were intraperitoneally applications of phenol red suspension (12.5 mg/mL) at 500 mg/kg dose. After 30 min, the mice were euthanized by cervical dislocation and 2 mL of saline solution was injected into the trachea for BALF harvesting. BALF obtained was centrifugated at 2500 rpm for 10 min, and then 500 µL of supernatant was recovered and stored separately. 50 µL of a solution of NaOH (0.001 M) was added to the supernatant and absorbance was measured at 565 nm wavelength in a spectrophotometer. Data are presented as means ± standard error of the mean (SEM) and was analyzed using GraphPad Prism® Software (v.5). **Results:** VAN (10^{-7} M a $3x10^{-3}$ M) evoked concentration-dependent relaxation with a maximum value of 33,79% (-0,3024 ± 3,993) to the contraction induced by carbachol and 92,76% (4,640 ± 10,92) to the contraction induced by KCl. VAN-O 100 mg/Kg (N=6) and AMB 120 mg/Kg (N=4) increases expectoration and the phenol red quantified in BALF presented the values 0,7155 ± 0,08046 µg/mL, 1,090 ± 0,2456 µg/mL respectively, and the doses were significantly efficacious ($p < 0.05$) in to induce phenol red secretion, when compared to saline group (0,4322 ± 0,07020 µg/mL, N=6). VAN-IP 100 mg/Kg presented value 0,4437 ± 0,09958 µg/mL of phenol red quantified in BALF, however, showed no significant expectorant, when compared to saline group. **Conclusions:** Based in these results, it could be concluded that vanillin possesses expectorant activity in dose of 100 mg/Kg administered orally and also generate spasmolitic effect in smooth muscle of isolated trachea of rat. These results suggest other studies are necessary to investigat the action mechanism of the vanillin. This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001

08.011 Investigation of the relaxant mechanism of action of the essential oil extracted from the leaves of *Hyptis martiusii* Bentt on isolated rat trachea. Ribeiro LAA[1], Barros ML[1], Menezes PMN[2], Brito W[1], Ribeiro TFF[1], Macedo CAF[3], Duarte-Filho LAMS[1], Silva D[1], Silva FS[1] [1]UNIVASF, [2]Renorbio, [3]UEFS

Introduction: The respiratory system in homeostasis provides oxygenation for all organs, however, when inflammatory damage reaches the airways it can cause diseases such as asthma (BEN-TAL, 2012) which is characterized by an inflammatory process of the airways that originates from an allergen (FERREIRA, 2016). The scientific community has sought alternatives in the treatment of these disturbances through active compounds present in medicinal plants such as *Hiptis martiusii.* Actually, this plant listed in the literature as an airway relaxant, although we do not yet know how it promotes its action, which in turn encourages studies on its mechanism of action (SUDHOFF, 2015). **Methology:** Ethical aspects: All the planned experiments will be executed according to the ethical principles of animal experimentation of the Ethics Committee on Animal Experimentation of UNIVASF (CEUA-UNIVASF) number: 0005/261118. Procedures: After all procedures required in terms of rat euthanasia, removal and cleaning of the trachea, the organ rested for 60 minutes for stabilization in the organs bath apparatus. After this period, a first contraction was induced by the addition of 10^{-5} M of carbachol (CCh) to the preparations. Five minutes later, indomethacin $5x10^{-6}$ M was added and after 20 minutes the preparations were exposed to specific blockers: 5 mM of Cesium chloride, a non-selective K + channels inhibitor; 3 mM of glibenclamide (ATP-sensitive K + channel inhibitor (KATP);5 mM Tetraethylammonium(inhibitor of K + channels opened by Ca^{2+} (KCa)and 2mM of 4-aminopyridine (K + channel inhibitor).Twenty minutes later, the organs were again exposed to CCh in the same concentration. After stabilization, the essential oil *Hiptis martiusii* (OHM) was added to the trachea preparations in crescent and cumulative at concentrations 1, 3, 9, 27, 81, 243 and 729 µg / mL, and the relaxant response was recorded. All data were expressed as the reverse percentage reverse of the maximum stress obtained by the addition of CCh, where maximum relaxation was obtained when the recorded tension was reduced to the initial levels, being the data were analyzed in DATAQ and Graphpad Prism 6. **Results:** After analysis, it was possible to observe that even with the presence of Cesium Chloride, Glibenclamide, 4 aminopyridine and tetraethylammonium, there was 100% relaxation. Additionally, the concentration 243 µg/mL of the essential oil reached in most experiments more than 50% of relaxation in relation to the contraction promoted by CCh. **Conclusion:** It is suggested that the essential oil *Hiptis martiusii* from the leaves promoted significant relaxations in the isolated rat trachea, being an effective compound in the relaxation of the airways. However, its mechanism of action is not affected by potassium channels, being necessary the use of other specific path blockers to determine its precise mechanism of action. **References:** BEN-TAL, A.. The Journal of physiology, v. 590, p. 1989-2008, 2012. FERREIRA, M. D. F. v. n.i, p. 2-50, 2016. SUDHOFF, H. et al.. PloS one, v. 10, n. 7, p e0133040, 2015. Apoio financeiro: UNIVASF, CAPES

08.012 Lectins from *Canavalia ensiformis* **e** *Canavalia brasiliensis* **prevent increased [Ca2+]c and necrosis of pancreatic acinar cells and improve experimental acute alcoholic pancreatitis**. Damasceno SRB[1], Pantoja PS[1], Marques FCJ[2], Carvalho CMM[1], Leite KESS[2], Lima MAS[2], Nascimento KS[1], Cavada BS[1], Assreuy AMS[2], Souza MHLP[1], Criddle DN[1], Soares PMG[1] [1]UFC, [2]UECE

Introduction: Ethanol/POA causes calcium elevations, mitochondrial collapse, necrosis of pancreatic acinar cells and acute experimental pancreatitis. It is one of the best models characterized for the study of acute alcoholic pancreatitis, which until now has no cure or effective treatment. In this sense, the ConA and ConBr lectins have important biological activities of cellular and systemic protection in several disease models, and, therefore, present themselves as a potential therapeutic alternative. The objective of this study was to evaluate the effect of ConA and ConBr on *in vitro* and *in vivo* pancreatic injury caused by Ethanol/POA. **Methods:** Acinar cells were isolated from pancreas of male Swiss mice (25-30g, protocol 25/2016) and human (protocol 1.764.066 / 16), incubated with ConA or ConBr (10 µg/ml, 1h), followed by incubation with Ethanol/POA (100 µM, 30 min). In order to analyze the calcium channel participation, tapsigargine (2 µM, competitive inhibitor of Ca^{2+} pump of the Sarco-Endoplasmic Reticulum-SERCA) was used. In order to evaluate the lectin domain, the lectins were incubated for 1 h with α-methyl-mannoside (α-MM; 0.1M). The analyzes were carried out using fluorophores and evaluated by confocal microscope or fluorimeter. ConA or ConBr coupled to fluorescein were used to evaluate their interaction with the acinar cell. Data expressed as mean ± standard error of the mean and considered statistical when $p < 0.05$. **Results:** The necrosis caused by Ethanol/POA (24.9 ± 2.6%) in murine acinar cells, compared to control (9.0 ± 2.6%), was prevented ($p<0,05$) by ConA (8.1 ± 1.3%) and ConBr (9.4 ± 0.8%). This protective effect was abolished by α-MM (ConA: 19.1 ± 3.5 and ConBr: 26.9 ± 6.4%). In human acinar cells ConA (64.21 ± 7.82%) and ConBr (61.70 ± 4.70%) also prevented necrosis caused by Ethanol/POA (84.37 ± 3.45%). The increase of $[Ca^{2+}]c$ caused by Ethanol/POA (488.3 ± 25.07AUC), compared to control (203.3 ± 1.2 AUC), was prevented by ConA (304.7 ± 12.79 AUC) and ConBr (262.6 ± 15.42 AUC). In the evaluation of stock-operated Ca^{2+} channels (SOCs), the increase of $[Ca^{2+}]c$ levels (2090 ± 139.5 AUC) promoted by administration of 10 mM Ca^{2+} in cells pre-incubated with TPG, compared to control (190, 3 ± 2.8 AUC), was decreased by ConA (1395 ± 104.6 AUC) and ConBr (1132 ± 131.2 AUC). The increase of $[Ca^{2+}]c$ caused by interaction of Ethanol/POA with inositol triphosphate (IP_3R) receptors (413.4 ± 28.30 vs Control: 193.3 ± 2.8 AUC) was decreased by ConA and ConBr (220.8 ± 08.03 e 232.0 ± 20.52 AUC, respectively). The increase of $[Ca^{2+}]mit$ promoted by Ethanol/POA (1248 ± 105.2 AUC), compared to control (189.4 ± 3.7), was reversed by ConA and ConBr (444.8 ± 22.86 e 440.3 ± 67.82 AUC, respectively). However, lectins did not prevent the entry of calcium into isolated mitochondria in MPTP analysis (POA: 0.32 ± 0.06 vs ConA: 0.31 ± 0.05 and ConBr: 0.32 ± 0.06). In addition, the cell amylase release caused by Ethanol/POA (18.7 ± 2.2) was prevented by ConA and ConBr (13.41 ± 1.1 and 13.25 ± 1.1, respectively). ConA and ConBr images coupled to fluorescein demonstrated that ConA is internalized and promotes apoptosis, whereas ConBr interacts with the cell membrane and does not exert this effect. In addition, the histopathological, inflammatory, biochemical and nociceptive processes caused by the administration of Ethanol/POA in micewere decreased by both lectins. **Conclusion:** These data together reinforce the role of these proteins as potential molecules for investigations of treatment in the course of acute alcoholic pancreatitis. **Financial Support:** CNPq e Capes.

08.013 Study of the respiratory mechanics of spontaneously hypertensive rats. Moriya H[1], Vitorasso R[1], Santana J[1], Lima WT[2], Oliveira MA[2] [1]USP, [2]ICB-USP
Introduction: Spontaneously hypertensive rats (SHR) are a genetic model that have been widely used in several studies because they exhibit many features of the human idiopathic hypertension (Neves et al., 2016; Morishita, 2016; Amoureux et al., 2012; Maarsingh et al., 2009). It has been demonstrated that hypertension can influence the development of many lung diseases (Shen et al., 2016; Hoang et al., 2016; Kodovanti et al., 2013; Kodavanti et al., 2006; Gilmour et al., 2004). Data of our laboratory suggest that airway resistance and tissue damping of SHR are increased in relation to normotensive rats (unpublished data). The aim of this study is to understand better the relationship between hypertension and respiratory mechanics alterations in SHR. **Methods**: Male SHR with fifteen weeks were treated or not with hydralazine (20 mg/kg in drinking water during two or six weeks), an antihypertensive agent that causes relaxation of vascular smooth muscle. Resting blood pressure (BP) was measured by a computerized tail-cuff system (PowerLab 4/S ADInstruments Pty Ltd, Castle Hill, Australia). Respiratory mechanics were determined using the forced oscillation technique (flexiVent, SCIREQ, Montreal, Quebec, Canada). Lung volume and bronchoalveolar fluid were also evaluated. **Results**: Treatment with hydralazine was effective in decreasing the arterial blood pressure at 2 and 6 weeks of treatment (2 weeks: untreated: 173.6±4.8, n=8; hydralazine: 112.2±3.1*, n=10; 6 weeks: untreated: 175.7±3.8, n=6; hydralazine: 113±6* mmHg, n=8). However, only rats treated with hydralazine during six weeks presented decreased tissue dumping (6 weeks: untreated: 2.31±0.08, n=6; hidralazine: 1.62±0.06*cmH_2O/mL, n=8) and elastance (6 weeks: untreated: 2.68±0.11, n=6; treated: 2.24±0.10*, cmH_2O/mL, n=8). In contrast, pre-treatment with hydralazine did not modify lung volume or the number of cells in the lung lavage in comparison to untreated rats. Values were expressed as Mean±SEM and analyzed by one-way analysis of variance (ANOVA) followed by Tukey-Kramer multiple comparisons test or by two-way analysis of variance followed by Bonferroni were used as appropriate. *$p<0.05$. **Conclusion**: Our results show that the anti-hypertensive effects of the hydralazine modify the respiratory mechanics of SHR. We are performing additional experiments to clarify whether the effect of hydralazine is directly associated or not to the hypertensive condition. **Financial Support**: Fapesp and CNPq.

08.014 Study of the possible activity of buriti oil (*Mauritia flexuosa* **L.**) **in the intestinal motility of the species** *Mus musculus*. Nunes ASS[1], Santos PHN[2], Queiroz BCSH[3], Gomes AF[2], Sousa GS[2], Neres HLS[1], Sousa RGC[1], Mendes HL[1], Sousa JA[2]
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Introduction: Even with the development of synthetic drugs, medicinal plants have been preserved as an alternative option for the treatment of gastrointestinal disorders in various parts of the world. Among the new species studied for the purpose of phytotherapics is buriti (*Mauritia flexuosa* L.), which is a Brazil native palm, used popularly for dysenteries. In this context, the aim of this study was to evaluate the activity of buriti oil (*Mauritia flexuosa* L.) on the intestinal motility in mice of *Mus musculus* species. **Methods:** The experiment was divided in two protocols: the first was the intestinal transit, in which 3 groups of 5 animals were treated orally with vehicle (1mL / kg), loperamide (2 mg / kg) and oil extract of Buriti (0.1 mL / 10 g), respectively; 30 minutes later, activated carbon was administrated to evaluate its course in the small intestine. The second protocol was diarrhea induced by castor oil, in which the animals were divided into 4 groups of 5, treated with vehicle (1mL / kg), loperamide (2 mg / kg) and Buriti oil extract (0.1mL / 10 g), respectively. After 30 minutes, the diarrhea was induced by castor oil for the last 3 groups, then stool quantification was started. **Results:** For the first protocol, the percentages of the distance traveled by the activated carbon in the small intestine of mice were statistically different ($p < 0.05$) for the treatments with buriti oil (0.1 mL / 10g), with a value of 30.11%, and control group (water 1 mL / kg), which obtained 70.17%; the value of the group that received buriti oil was similar to that of loperamide. In these cond protocol, the mean numbers of total episodes (solid and liquid stools) of the mice treated with buriti oil were 1.400 ± 0.872, differing statistically ($p < 0.05$) from the group that received water and castor oil, which had mean value of 1.750 ± 1.181, the treatment value with buriti oil was similar to that of loperamide treatment, which had 0.200 ± 0.200. Considering the level of significance reached by the intestinal motility activity of *Mauritia flexuosa* L. oil, it is shown as a promising therapeutic alternative in this field, since this oil inhibits intestinal transit and castor oil-induced diarrhea. **References:** RAMALHO, EZ; MANNIGEL, AR. Effect of organic fertilizer doses on nitrogen uptake by *Pereskia aculeata*. VI internal show of scientific initiation works. Maringá, 2012. RANGEL, M .; BRAGANÇA, FCR. Representations of pregnant women about the use of medicinal plants. **Rev. Bras. Pl. Med.** Botucatu, v.11, n.1, p.100-109, 2009. FANSHAWE, D. Forest Productsof British Guiana, Part II, ForestryBulletin, No. 2 (New Series), Forest Department, British Guiana, 1950. STICKNEY, JC; NORTHUP, DW. Effect of gastric emptying upon propulsive motility of small intestine in rat. **Experimental Biology and Medicine,** v. 101, p. 582,1959. AWOUTERS, F. et al. Delay of castor oil diarrhoea in rats: a new way to evaluate inhibitors of prostaglandin biosynthesis. **Journal of Pharmacy and Pharmacology**, v. 30, n. 1, p. 41-45, 1978. **Financial Support:** University Center St. Augustine UNIFSA / CNPq / CAPES. **Ethics Committee on Research with Animals:** 6585/15.

08.015 Essential oil of *Dysphania ambrosioides* L exhibits negative modulation of peristaltism and antisecretory effects in gastrointestinal tract of mice. Lima JVO[1], Cavalcante GL[2], Sousa CFAJ[2], Sousa RGC[2], Figueredo JS[2], Oliveira GR[1], Britto MHRM[2], Sousa JAD[1] [1]UNIFSA, [2]UFPI

Introduction: Medicinal plants have been widely used in folk medicine, with the extensive use of *Dysphania ambrosioides L* (*DA-EO*), in the face of gastrointestinal diseases. Its effects are explained from the bioactive compounds present in the plant. Thus, the present study aimed to investigate the possible activity exerted by the essential oil of DA-EO *in vivo* on peristalsis and secretion of the gastrointestinal tract of mice. **Methods:** The plant was collected, then registered with the identification number 31.648 and extracted the oil in a hydrodistiller. Subsequently, the essential oil was applied in four groups to evaluate the intestinal and gastric activity, being as follows: I) water + activated charcoal, loperamide + activated charcoal; II) water, water + castor oil, loperamide + castor oil; III) water, water + ethanol, omeprazole + ethanol; and IV) water, water + indomethacin, cimetidine + indomethacin. **Results:** The pre-treatment with essential oil of *DA-EO* demonstrated a significant decrease in intestinal motility in normal mice, thereby modulating the transit of activated charcoal with predominance for the proximal extension to the stomach, thus attesting its antimotility effect through its reduction in peristalsis. In accordance with intestinal transit, the pre-treatment with *DA-EO* promoted significant inhibition of the castor oil-induced diarrheal process, showing its potential antidiarrheal effect in relation to the negative control group little inhibition difference in relation to loperamide treatment. At the stomach level, lesions generated by the ethanol-induced ulcer model were significantly attenuated by pre-treatment with the oil in reference to the untreated group and without significant difference of the standard treatment with omeprazole, being only visual. The multiple lesions generated in the negative control group had a significant decrease in lesion content when pretreated with *DA-EO* oil in relation to the untreated group and little significant difference in relation to the group treated with cimetidine, showing protective results in the prostaglandinergic mechanisms, which causes gastric lesions, by the indomethacin-induced ulcer model. **Conclusions:** The oral pre-treatment with *DA-EO* oil was able to reduce the peristalsis of activated charcoal and to promote inhibition of the diarrheal events promoted by the laxative agent at the intestinal level. Additionally, it was able to reduce the degree of ulcerative lesions in the stomach caused by ethanol and indomethacin, thus demonstrating its action via oxidant and prostaglandinergic mechanisms that causes gastric lesions, respectively. References: GAGINELLA, T. S. *et al*. Actions of ricinoleic acid and structurally related fatty acids on the gastrointestinal tract.II. Effects on water and electrolyte absorption *in vitro*. Journal of Pharmacology and Experimental Therapeutics, v. 195, n. 2, 1975.Financial support: UNIFSA/CNPq/CAPES. Animal Research Ethics Committee: 2045/1.

08.016 Evaluation of effects on gastrointestinal motility of alpha-asarone in mice. Silva AO, Silva LMO, Serafim CAL, Araruna MEC, Pessoa MLS, Alves Júnior EB, Batista LM UFPB

Introduction: Alpha-asarone is an aromatic organic compound of the phenylpropanoid class, found mainly in essential oils extracted from the species of the genus Acorus, being the major constituent of the essential oil of *Acorus gramineus.* This phenylpropanoid has promising activity in disorders affecting the gastrointestinal tract, such as diarrhea and peptic ulcers. Thus, the present study aimed to evaluate the effects on gastrointestinal motility of alpha-asarone in mice. **Methods:** To evaluate the effect of alpha-asarone on gastric emptying, male Swiss mice (n = 7), weighing 25-35 g, were fasted for 24 hours, pretreated with 12% Tween 80 orally (10 mL / kg), loperamide 5 mg / kg or alpha asarone in their different increasing doses (15, 30, 60 and 120 mg / kg). After 1 h, the phenol red marker 10 mL / kg (0.05% on 1.5% carboxymethylcellulose) was administered to the different groups, so that a time-zero control group was euthanized immediately after labeling, while the remaining groups were euthanized after 30 minutes. The abdominal cavity was opened, the pylorus and the distal esophagus were clamped. The stomach was removed, opened and washed with 7 mL of distilled water. The gastric contents were collected and centrifuged at 3000 rpm for 15 minutes. Then, 1 mL of the supernatant was collected and 1 mL of 1 N NaOH (pH = 12) was added. The results were obtained by spectrophotometry with a wavelength reading of 560 nm and expressed as a percentage of gastric emptying. (SCARPIGNATO, S., Arch Int Pharmacodyn et Therapie v. 246, pp. 286-294, 1980). In order to evaluate the effect of alpha-asarone on intestinal transit, the animals received the same treatments from the previous protocol and after 60 minutes the marker (charcoal suspension in 5% arabic gum - 10mL / kg) was administered. After 30 minutes, the animals were euthanized and the intestine was removed from the duodenum to the ileocecal junction. With a ruler, the total length of the intestine and the distance traveled by the activated charcoal were measured to evaluate the percentage of intestinal transit. (STICKNEY, J. C., NORTHUP, D. W., Experimental Biology Medicine, v. 101, p.582, 1959). **Results:** In the gastric emptying model, the animals pretreated with the vehicle alone (tween 80 12%) presented 91% of gastric emptying, whereas the alpha-asarone pretreated groups at all doses tested (15, 30, 60 and 120 mg / kg) significantly reduced the percentage of gastric emptying (87, 79, 67 and 36%, respectively) ($p < 0.001$). In the intestinal transit model, the groups treated with alpha-asarone at all doses tested significantly ($p < 0.001$) the percentage of intestinal transit (66, 64, 52 and 47%, respectively), when compared to the treated group only with the vehicle (95% of intestinal transit).Conclusion: Thus, it was possible to suggested that alpha-asarone has effects on gastrointestinal motility, which may be related to its antidiarrheal activity. Acknowledgments: CNPq / UFPB / PgPNSB / IpeFarM. Ethics Committee on Animal Use (UFPB): number 4996090518

08.017 Effects of bradykinin in non-adrenergic non-cholinergic Gaba-induced relaxation in rat duodenum. Almendra JSL[1], Sousa IA[1], Petri C[1], Cavalcanti SMG[1], Alves Filho FC[1], Cavalcanti PMS[2] [1]UFPI, [2]UFPB

Introduction: In the rat duodenum, γ-Aminobutyric acid (GABA) causes a non-adrenergic non-cholinergic relaxation sensitive to inhibitors of nitric oxide synthase, an enzyme stimulated by Ca^{2+}. In this preparation, bradykinin (BK)causes a biphasic effect (relaxation followed by contraction). Since the activation of inward calcium currents precedes the neurotransmitter release and since evidence exists that bradykinin inhibits N- and L-type neuronal calcium currents, the hypothesis is that GABA responses might be inhibited by BK. The aim of this study was to determine if BK inhibits GABA-induced relaxations in the rat duodenum. **Methods:** All experimental procedures were approved by the Committee on Animal Research and Ethics/UFPI (374/2017). Wistar rats (weight 0.3 kg; sample size= 6) were keep fasted (48 hours) and then were euthanized by decapitation after injection of pentobarbital (50 mg/Kg, intraperitoneally). The abdominal cavity was opened and longitudinal segments of the duodenum measuring 3.0 cm were removed and placed in organ baths containing Jalon's solution[(g/L): NaCl: 9; KCl: 0.46; $CaCl_2$: 0.2; $NaHCO_3$: 0.5 and glucose: 0.5]containing also guanethidine (3 µM) and atropine (0.3 µM) at 30ºC, continuously bubbled with air and under initial basal tonus of 2g. After 1h of wash, the agonists were added in the following order: GABA (100µM), KCl (20mM) and BK (0.1µM). Succeeding 30 min of wash, the agonists were added in sequence: BK (0.1µM), GABA (100µM) and KCl (20 mM). After other 30 min of wash, the agonists were added in the same other as the first addition. Data presented are means ± SEM. Means were compared by an unpaired t-test. A probability value less than 0.05 was considered significant. **Results:** Following 1 h of wash, the basal tension was increased from 2g to 2.98±0.28g (n=6). On this tension (considering 100%) the additions of GABA, KCl and BK promoted transient relaxations of 48.09±4.32% (n=5), 20.70±3.40% (n=4) and 79.66±1.56% (n=4)of the tension, respectively. In the second sequence of additions, BK and GABA promoted transient relaxations of 76.35±2.42% (n=4) and 23.87±2.38% (n=4) (t-test, $p<0.002$; n=5), while KCl-induced relaxations were completely abolished. In the third sequence of additions, the transient relaxations induced by GABA, KCl and BK were restored to 45.97±4.70%(n=5), 24.18±8.70%(n=4) and 78.36±3.40%(n=4), respectively. **Conclusion:** These results indicate that BK reversibly reduces GABA and KCl-induced relaxations. An explanation for this response is the inhibition of enteric neurons' stimulation by BK. Considering BK's blocking action on neuronal inward calcium currents, the involvement of this action in BK's inhibitory effects on GABA and KCl- induced relaxations can be suggested.

08.018 Evaluation of the mechanisms involved in the anti-secretory effect of H_2S in the diarrhea induced by cholera toxin in mice. Sousa FBM[1], Oliveira AP[2], Araújo AKS[2], Nolêto IRSG[2], Nogueira KM[3], Pacheco G[2], Fonseca MMV, Chaves LS[2], Lopes ALF[2], Medeiros JVR[2] [1]UniNassau, [2]UFPI, [3]UFC

Introduction: H_2S is a gasotransmitter which participates of physiological and pathophysiological processes in the gastrointestinal tract. We recently reported that H_2S has antisecretory activity against cholera toxin (CT) induced diarrhea in mice (SOUSA et al. Nitric Oxide, 76, 152, 2018), however more studies are needed to elucidate the possible mechanism of action. **Method:** We submitedswiss mice after an eighteen-hour fasting to induction of diarrhea by CT in the isolated intestinal loop model. After isolation, we inoculated the loops with 100 µl of the NaHS, GYY-4137 (both H_2S donor molecules at a dose of 27 µM) or PBS (negative control group). After 5 minutes, the intestinal loops were inoculated with 1µg of CT dissolved in 100 µl of PBS. After this procedure, we sutured and left the animals to recover from anesthesia. Four hours after anesthesia, we euthanized the animals, the intestinal loops were removed to evaluate the g/cm ratio of the loops. We collected the intestinal loops for histopathological analysis by HE, mast cell evaluation by toluidine blue, vilo depth and crypts ratio, analysis of myeloperoxidase activity (MPO) and real-time PCR for inflammatory markers (COX2, CXCL2, IL- 6, iNOS2, IL-17a, NFKB, NKK, SLC6A4, INF-γ, and STAT3). **Results:** CT showed a marked accumulation of intestinal fluid in comparison to the negative control group (PBS). Groups pretreated with H_2S donors (NaHS and GYY) show a significant reduction of intestinal fluid secretion. Quantitative analysis of MPO enzyme activity showed a significant reduction in NaHS and GYY treated groups. In addition, we observed that these donors restored the integrity of the intestinal mucosa by maintaining the villi/crypt depth relation. Despite these data, no marking was observed for mast cells in all groups study. We did not observe in PCR analysis increasing of the inflammatory markers in the treated groups or in the positive control group (treated only with CT). **Conclusion**: H_2S has antisecretory activity and it is an essential molecule for protection against secretion and intestinal damage induced by CT. Possibly, CT at this dose does not cause marked intestinal inflammation and H_2S may be acting inhibiting another mechanism by which the cholera toxin increases intestinal secretion. Faced with this, more studies are necessary to elucidate its possible mechanism of action. **Support**: CNPq CEP UFPI: Protocol 493/18

08.019 Eucalyptol ameliorate lung function on rats exposed to cigarette smoke. Viana EA[1], Lima CC[2], Melo PO[2], Serra D[2], Cavalcante FSA[2], Lima EKF[1] [1]Ufersa, [2]UECE
Introduction: Cigarette smoke is able to cause respiratory disease affecting the airways and lung function. Eucalyptol (EUC) is described as an anti-inflammatory compound specially to treat respiratory disease. **Aim:** In this study we investigated the activity of EUC on lung function on rats exposed to cigarette smoke. **Methods:** Wistar, male (250 – 300 g) were divided into the following groups: control (sham-exposed), cigarette smoke (CS) (rats exposed to 12 cigarettes a day for 30 days), CS + 1 mg/mL (CS mice treated with 1 mg/mL eucalyptol for 30 days). Rats in the CS and control groups received vehicle for 15 days. The control group was exposed to sham smoking. The CS group was treated with EUC (1 mg/mL) or vehicle by inhalation (15 min/daily) for 30 days. After 24 hours the animals were anesthetized by sodium pentobarbital (90 mg/kg) intraperitoneal (i.p.) and paralyzed by pancuronium bromide (50 mg/kg), then were tracheotomised and connected to *flexiVent* system. Were collected Newtonian resistance (R_N), inspiratory capacity *(CI);* tissue resistance*(G)*; tissue elastance*(H);* static compliance *(C_{ST}).* Were considered statistically significant when $p<0,05$. Results**:**The R_N increased in the CS group (0.08 ± 0.02; $p<0,01$) when compared to control group. The treatment with EUC reduced the R_N0.05 ± 0.02; $p<0,03$). The *CI* was increased on CS group (12.40 ± 1.77; $p<0,01$) when compared to control group and the treatment with EUC reduced the CI (10.10 ± 1.95; $p<0,03$). The *H, G e* C_{ST}did not show differences between the groups. **Conclusion:** Eucalyptol is able to reduce the airway resistance and improve the capacity inspiratory on rats exposed to cigarette smoke without changes on tissue resistance, elastance and compliance.

08.020 Evaluation of antidiarrheal and gastroprotective activity of α-asarone in animal models. Serafim CAL, Alves Júnior EB, Pessoa MLS, Batista LM UFPB

Introduction: α-Asarone is a phenylpropanoid, found mainly in essential oils extracted from the species of the genus Acorus and that presents some pharmacological activities described in the literature. Thus, the present study aimed to evaluate the antidiarrheal and gastroprotective activity of α-asarone in experimental models. **Methods:** For the evaluation of antidiarrheal activity, Swiss males (Mus musculus) (n = 7), weighing 25-35 g, were fasted for 12 hours and orally treated with 10 mL / kg of vehicle tween 80 a 12% (negative control), loperamide 5 mg / kg (positive control) or α-asarone (15, 30, 60 and 120mg / kg). After one hour of this treatment, castor oil (1mL / 100g animal weight-v.o.) was administered. The animals were placed individually in paper-lined boxes and the severity of the diarrhea was observed for 4h, analyzing the parameters: evacuation rate (solids, semi-solids or pasty and liquids), percentage of liquid feces and percent inhibition of diarrhea (AWOUTERS et al., Journal of Pharmacy and Pharmacology, 30: 41-45, 1978). The gastroprotective activity was evaluated by the experimental protocol of acute induction of gastric ulcer with HCl / ethanol. For this, 24-hour fasting mice were pretreated with 10 mL / kg of 12% tween 80 (negative control), carbenoxolone 100 mg / kg (positive control) or α-asarone at different doses orally. After 50 minutes the ulcer induction was performed with administration of a solution of the inductor agent (0.3M HCl / 60% Ethanol - 0.2 mL - v.o.). One hour later, the animals were euthanized, the stomachs removed and opened along the great curvature to macroscopically quantify and classify the ulcerative lesions according to their number and severity, resulting in ulcerative lesion index (ILU) (MIZUI, T DOTEUCHI, M. Japanese Journal of Pharmacology, v 33, pp. 939-945, 1983). Data were considered significant when $p < 0.05$. **Results:** From the castor oil-induced diarrhea model in mice, it was observed that pretreated animals with a dose of 120 mg / kg of α-asarone did not present with liquid feces, and there was a reduction in the evacuation rate with percent inhibition of 94% of diarrhea ($p < 0.001$), when compared with negative control group. In the HCl / ethanol ulcer induction model, the groups that were pretreated with α-asarone at the doses of 15, 30, 60 and 120 mg / kg showed a significant reduction of the ulcerative lesion index when purchased with the group negative control, with a percentage of inhibition of 28%, 33%, 38% and 63% respectively. **Conclusion:** In this way, it is possible to suggest that α-asarone presented antidiarrheal and gastroprotective activity in the models and doses evaluated. **Acknowledgments:** CNPq / UFPB / PgPNSB / IPeFarm. Ethics Committee on Animal Use (UFPB): 035/2017 / 4996090518

08.021 Evaluation of the gastroprotective activity of a pharmaceutical form with extract from the leaves of *Spondias mombin*. Araruna MEC[1], Santos VL[2], Medeiros ACD[2], Medeiros FD[2], Rêgo RIA[2], Silva PR[2] [1]UFPB, [2]UEPB

Introduction: *Spondias mombin* L. (Anacardiaceae) is present in all regions of Brazil. Its leaves, flowers and barks are used in the form of teas in popular medicine for the treatment of diseases of the digestive system. There are reports in the literature on the antibacterial, antifungal, antimicrobial, antiviral and gastroprotective potential of this plant species. Therefore, the present study aimed to evaluate the gastroprotective activity of the leaf extract of *Spondias mombin* and a formulation (tablet) obtained with the extract in animal models. **Methods:** The fresh leaves were cleaned and placed in an air circulation oven at 40 ° C for the drying process and then sprayed. The extract was obtained by extraction in an ultrasonic bath with water: ethanol (30:70, v / v), and dried by spray dryer. The main phytochemical markers were identified by High Performance Liquid Chromatography (HPLC). The excipients used in the formulation were selected after pre-formulation thermoanalytical studies, where the compatibility of the extract with excipients used in tablets was investigated. Swiss mice 25-30g (n = 6 animals / group) were treated orally with saline (0.1 mL / 100 g), lansoprazole (30 mg / kg), *S. mombin* extract (250 and 500 mg / kg), or formulation (250 mg / kg). Sixty minutes after the treatment absolute ethanol (0.2 mL / animal v.o) was administered. One hour after administration of the necrotizing agent, the animals were euthanized and the stomachs removed and opened along the great curvature for ILU determination. The results were expressed as mean ± standard deviation (d.p.) of the mean and the minimum significance level was $p < 0.05$. The differences between the groups were calculated by analysis of variance (ANOVA), followed by the Tukey post-test, using the software, GraphPad Prism 5.0, San Diego, CA, USA. **Results:** In HPLC, flavonoid gallic acid was identified as the major compound. The results of thermal analysis show that the compatible excipients were microcrystalline cellulose 101, carboxymethylcellulose, starchglycolate, talc and magnesium stearate. The tablets were formulated by the direct compression route, with a total weight of 800mg. In the model of ethanol-induced ulceration, *S. mombin* extract at doses of 250 and 500 mg / kg and formulation (250 mg / kg) showed a significant gastroprotective effect, inhibiting the formation of ulcers in 60% and 42% and 54%, respectively, relative to the negative control group, and without significant difference between the inhibition produced by the extract and the formulation. **Conclusion**: Thus, it was possible to suggest that the extract of the leaves of *Spondias mombin* presents gastroprotective activity and the developed formulation presented activity similar to administration of the isolated extract, in the evaluated model. Acknowledgments: CNPq / UFPB / UEPB. Ethics Committee on Animal Use (FACISA-FCM): 6101032016

08.022 The study of the possible effect from the *Melissa officinalis* ethanolic extract on the gastrointestinal secretion of Mus muscullus. Sousa CFAJ[1], Sousa RGC[1], Lima JVO[2], Oliveira GRD[2], Ferreira LVA[2], Oliveira IS[3], Britto MHRM[2], Sousa JA[2] [1]UFPI, [2]UNIFSA, [3]Facid

Introduction: *Melissa officinalis* has been for a long time used as a medicine to treat digestive discomfort (AUBERT et al, 2019); nevertheless, the few studies made about the subject are rather contradictory. The purpose of this article is to analyze the possible activity from the ethanolic extract of the leaves from *Melissa officinalis* (EEMo) on gastrointestinal secretion of mice. **Methodology:** The botanic material was previously cleaned with filtered water and dried in shade, then partially grinded in a blended and added the extractor (95% alcohol) in a proportion of 1:5 p/v. The container used was an amber flask put in room temperature for the period of seven days, being stirred up from time to time. After this period, the solution went through a vacuum filtration and concentrated in a rotary evaporator at 40ºC. The animals were divided in 4 groups (n=6 animals) for each experimental model, being kept in fasting of solids for 12h. On the first model, animals were orally administrated with distillated water (1 mL/kg), EEMo (500 mg/kg) or omeprazole (20 mg/kg) accordingly to the groups they belonged. 1h after the procedure, a gastric lesion was induced by oral ingestion of 95% ethanol (0,2 ml/animal). 30 minutes after that, the animals were anaesthetized through thiopental sodium (50 mg/kg) intraperitoneally taken and humanely killed by cervical dislocation. On the second, the animals were orally treated with vehicle, cimetidine (100 mg/kg) and EEMo (500 mg/kg). 1h after the procedure, all groups received indomethacin through transdermal administration systems (30 mg/kg) to induce gastric ulcers and 6h after they were anaesthetized and humanely killed as described in the previous model. After euthanasia, the stomach of the animals was taken and then open through the greater curvature direction, washed with saline solution (0,9%), put in petri dishes, photographed and the gastric lesions were analyzed, verifying the damaged area in pixels using GIMP 2.0. **Results:** The lesions induced by ethanol showed significant reductions in the group treated with EEMo (5.3±1.8) when related to the vehicle (9.1±0.6), which presented hemorrhagic lesions. Just as the gastric lesions, in the model where ulcer were induced by indomethacin, the group treated with EEMo had a smaller percent of pixel in the damaged areas (4.6±0.5), when related to the vehicle (11.3±0.4). **Conclusion:** It was possible to observe that EEMo presents a gastroprotector potential against experimental gastric ulcers induced by using indomethacin and ethanol in mice, being classified as produce used to prevent gastric ulcer. **References:** AUBERT, P. et al. Basal and Spasmolytic Effects of a Hydroethanolic Leaf Extract of *Melissa officinalis* L. on Intestinal Motility: An Ex Vivo Study. **J Med Food**, v.1, 2019. **Protocolo do Comitê de Conduta Ética para o Uso de Animais Experimentais (UNIFSA):** 2037/18. **Apoio Financeiro:** UNIFSA/CNPq/CAPES.

08.023 Treatment with L-cysteine ameliorates oral mucositis induced by 5-fluorouracil in hamsters. Oliveira AP[1], Fonseca KM[1], Sousa FBM[2], Carvalho JL[1], Lopes ALF[1], Costa MDR[3], Silva VF[3], Silva BM[3], Leitão RFC[3], Cerqueira GS[3], Medeiros JVR[1] [1]UFPI, [2]UniNassau, [3]UFC

Introduction: Mucositis is an inflammation that occurs in the lining of the oral cavity resulting from the cytotoxic effect of 5-Fluorouracil (5-FU) treatment. Is necessary to research new management for this adverse effect, aiming at anti-inflammatory activity. There are studies that show the L-Cysteine (L-cys) administration causes the production of Hydrogen Sulphide (H_2S), having an anti-inflammatory and antioxidant action. Thus, the objective of this research was to investigate the protective effect of L-Cys on the oral mucositis induced by 5-FU. **Methods:** Hamsters (*Mesocricetus auratus*) were selected and divided into 5 groups (n=6): control group, received saline solution at 0.9% via intraperitoneal (ip); Mechanical Trauma (MT) animals subjected to scratch in jugal mucosa; 5-FU and L-cys groups received doses of 60 and 40 mg/kg of 5-FU ip on days 1 and 2 respectively, and on the 4th day the right jugal mucosa was excoriated. In the latter group the animals received 10 or 40 mg/kg of L-cys (ip) on the 5th and 6th day of the experiment. For the data analysis, survival and weight evaluation were performed, as well as macroscopic and histological mucosal analysis, dermis thickness, mast cell counts, biochemical dosages for malondialdehyde (MDA), reduced glutathione (GSH), myeloperoxidase (MPO), nitrite/nitrate, percentage of collagen, as well as immunohistochemistry for Cox-2 and dosage of H_2S levels in animal's tissues. **Results:** As expected, there was a decrease in survival (45%) of the 5-FU group when compared to the survival rate in the control and MT groups (100%), and treatment with L-cys promoted a significant increase in survival when compared to the 5-FU group ($p<0.05$). It was observed that both doses of L-cys were able to prevent and reverse the morphological changes promoted by 5-FU in the jugal mucosa in a statistically significant ($p<0.05$). Therefore, the elective dose of L-Cys was 40 mg/kg as it showed a significant increase in the thickness of the dermis ($p<0.05$), percentage of collagen ($p<0.05$), as well as decrease the parameters of oxidative stress and inflammation ($p<0.05$), while maintaining the basal levels of GSH and increase of H_2S ($p<0.05$). Concerning Cox-2 levels in the L-Cys group, there was a statistically significant ($p<0.005$) decrease in Cox-2 immunolabeling when compared to the 5-FU group, as well as a decrease in mast cell numbers ($p<0.005$). **Conclusion:** Thus, this study shows that L-cysteine at the dose of 40 mg/kg had a protective and anti-inflammatory effect on the jugal mucosa, increasing the thickness of the dermis, percentage of collagen fibers and maintaining GSH levels. Further, our results suggest that L-cysteine probably could exhibit these effects by acting as an enzymatic substrate that increases the endogenous production of H_2S. **License number of ethics committee:** Protocol number 002/18. **Financial support:** CAPES, CNPq, FAPEPI.

08.024 Polymeric nanoparticles as a sodium alendronate release vehicle in rats: effective study and gastrointestinal toxicity. Iles B, Pacheco G, Nolêto IRSG, Sousa GC, Oliveira ACP, Alencar MS, Araújo AR, Dourado FF, Ribeiro FOS, Silva DA, Medeiros JVR UFPI

Introduction: Osteoporosis is a metabolic bone disease,the fracture being its clinical manifestation. Nowadays, the therapy for the control and treatment of bone diseases is the use of bisphosphonates. Among bisphosphonates, alendronate sodium (ALD) is the most commonly used drug. However, the continued use of the alendronate can lead to gastric diseases, which limits the compound usage. For this matter, nanoparticles (NPs) constituted by modified biodegradable polymers is attracting researchers' attention due to their therapeutic potentialities. The present work aimed to synthesize polymeric nanoparticles using two natural polymers, as a new ALD delivery vehicle, besides characterizing and evaluating its gastric toxicity in female rats. **Methods:** The NPs were synthesized by emulsion at room temperature under constant stirring at 15000 rpm for 7 minutes using cashew gum propionic anhydride (CGPA) and angico gum (GAng) at 0.1% and 0.05% and alendronate sodium in different concentrations: 5, 10 and 15 mg, diluted in DMSO 1%. For the generated system characterization, the techniques of dynamic light scattering (DLS) and Zeta potential analysis were used. The NPs were also characterized by atomic force microscopy (AFM), in order to evaluate the morphological profile. Besides that, infrared spectroscopy (FTIR) readings were performed to characterize the chemical profile of the NPs and characterize the cashew gum modification carried out in the present study. The incorporation potential calculation was made through the measurement of the alendronate in spectrophotometer UV-Vis with 260 nm readings using calibration curve. For gastrointestinal toxicity tests, NPs were lyophilized, resuspended in saline solution and administered orally to the rats at a rate of 50mg / kg of ALD. Not only, tissue samples from the stomach were collected for macroscopic, histological and AFM analysis; tissue samples were collected for MDA and MPO biochemical analysis as well. Results**:** The FTIR analysis showed that the cashew gum modified with propionic anhydride presented bands at 1370 cm^{-1} and 1557 cm^{-1}, typical of acylation reaction. The GAng FTIR analyzes presented bands at 1076 cm^{-1} and 1024 cm^{-1}, being related to glycoside units of natural polysaccharides, assuring thispolysaccharide composition. Through DLS analysis, it was observed that the diameter of the formulated NPs ranged from 268.50nm - NPs without the presence of ALD - and 51.02 nm - NPs formulated with 15mg of ALD. In addition, the Zeta potential of NPs showed values between -23.05 mV and -12.05 mV. The AFM analysis showed that the formulated NPs present a spherical archetype, characteristic of polymeric nanoparticles. The incorporation efficiency tests demonstrated that NP's formulated with 0.1% polymer and 15mg of ALD were able to incorporate about 98% of ALD; thus, only this one was selected for the biological assays. Besides that, FTIR of NPs in solution and lyophilized was executed. Those presented specific bands of ALD (P=O in 911 cm^{-1}, 746 cm^{-1}), and the polymers used in its formulation. Biological assays demonstrated that the formulated NPs caused less damage to the gastric mucosa when compared to non-nanoformulated ALD. So, it is possible to conclude that the nanoparticles synthesized with natural polymers in order to encapsulate the drug alendronate sodium, were able to incorporate about 98% of the drug used, also reducing the toxic effects to the gastric mucosa caused by the ALD. **License number of ethics committee:** Protocol number 008/19. **Financial Support:** CAPES, CNPq, FAPEPI.

08.025 Anti-inflammatory and antibacterial activities of new substituted n-acylidrazonic derivatives. Ramos KRLP[1], Borba EFO[1], Silva JDAG[1], Sousa RS[1], Santos VL[2], Moura RO[2], Silva TG [1]UFPE, [2]UEPB

Introduction: Acute lung injury is a serious clinical condition associated with excessive inflammatory response, sepsis, respiratory failure and non-cardiogenic pulmonary edema due to increase of permeability of the pulmonary alveolar-capillary membrane. The *N*-acylhydrazonic derivatives have important pharmacophoric groups, which makes them candidates for drugs with anti-inflammatory and antibiotic activity, so they have attracted the interest of researchers for the discovery of new drugs. **Objectives:** The aim of this study was to evaluate the action of the new substituted *N*-acylhydrazonic derivatives JR-13, JR-15, JR-17 and JR-18 on Lipopolysaccharide-induced Acute Lung Injury (LPS) in animal model and to assess the activity antibacterial, by determining the Minimum Inhibitory Concentration (MIC) against resistant *Staphylococcus aureus* oxacillin (UFPEDA709) and *Klebsiella pneumoniae* (UFPEDA396) from the collection of microorganisms of the Department of Antibiotics of the Federal University of Pernambuco. **Methodology:** For anti-inflammatory activity, the assay of Acute Lung Injury was performed, approved by the Ethics Committee on Animal Use under number 23076.030428 / 2019-17, where Balb/c mice were divided into five groups: Group 1: Intranasal LPS, 25 µg; Group 2: JR-13, 10 mg/kg + LPS; Group 3: JR-,15 10 mg/kg + LPS; Group 4: JR-17, 10 mg/kg + LPS; Group 5: JR-18, 10 mg/kg + LPS and Group 6: Dexamethasone 0.5 mg/kg + LPS. Twenty-four hours after induction of inflammation, the animals were euthanized and bronchoalveolar lavage (BAL) was collected for leukocyte migration analysis. For the antimicrobial activity the MIC determination was performed according to Clinical and Laboratory Standards Institute (CLSI, 2018), where 1000 µg/mL of each compound was added to the 96-well plate containing medium and successive dilutions were made up to 0.98 µg/mL. Then, 1.5×10^8 colony-forming units (CFU/mL) microbial suspension, corresponding to 0.5 of the McFarland scale was added to the plate. The plate was incubated for 24 h in order to determine the MIC. For quantitative analysis of bacterial growth, resazurin (0.01 mg/mL) was added to all wells, followed by incubation for 1 h and subsequent reading of the plates. The research was conducted with financial support from CAPES. **Results:** Analysis of BAL showed that JR-13, JR-15, JR-17 and JR-18 presented, respectively, 53.6%, 32.5%, 79.2% and 77.5% of inhibition of cell migration. The MICof JR-13, JR-15, JR-17 and JR-18 for UFPEDA709 was, respectively, 250 µg/mL, 250 µg/mL, 120 µg/mL and 250 µg/mL;and for UFPEDA396 was 120 µg/mL for these four compounds. **Conclusions:** In conclusion, *N*-acylhydrazone derivatives showed relevant preliminary results in LPS-induced ALI, especially JR-17 and JR-18, probably due to the presence of the bromine bound to the bezene ring in the compound JR-17 and the presence of nitrogenous heteroaromatic compounds fused to the benzene ring in compound JR-18. In addition, the compounds presented significant microbial activity, being able to act as anti-inflammatories and as antimicrobials agents.

08.026 An optimized method to evaluate expectorant drugs in mouse model. Menezes PMN[1], Brito MC[2], Sá PGS[2], Ribeiro LAA[2], Rolim LAR[2], Silva FS[2] [1]Renorbio, [2]UNIVASF

Introduction: The expectorant activity has been extensively studied in mice, involving the secretion of phenol red in the trachea or bronchus. However, there is no convergence in use of the phenol red dose, drugs used, sample analyzed, etc. Therefore, this work had the objective of standardizing the methodology for expectorant activity of drugs, using bronchoalveolar fluid (BALF). **Methods**: The analytical and pharmacology procedure for the quantification of phenol red in the BALF was investigated. The pH influence, quantity of the alkali agent added, BALF influence, appropriate wavelength for quantification of phenol red and standardization curve using UV-VIS spectroscopy was optimized. Furthermore, different phenol red suspensions (0.05 0.5, 1.25, 2.5 and 5%) were prepared and administered intraperitoneally in mice at doses 5, 25, 50, 250 or 500 mg/kg. Additionally, standard drugs were used for evaluation of expectorant activity as ambroxol (30, 60 and 120 mg/kg), guaifenesin (25; 50 and 100 mg/kg), NH_4Cl (1,000, 1,500 and 2,000 mg/kg) or salbutamol (2, 4 and 8 mg/kg). **Results**: The phenol red used at dose 500 mg/kg and prepared in concentration at 1.25% (w/v) showed significant difference when compared to the other doses and vehicle. Besides that, the alkalinizing agent of choice would be NaOH (0.1 M). In relation to pharmacological validation it was shown that ambroxol (30, 60 or 120 mg/kg), guaifenesin (100 mg/kg), NH4Cl (2000 mg/kg) or salbutamol (4 mg/kg) can be used as positive controls, showing significant difference for the vehicle. **Discussion**: The optimization of the method to quantify expectorated phenol red was effective and low cost for the discovery of new expectorant drugs. In addition, the concentration of phenol red was higher than other studies in the literature, even considering different methods, which reconfirmed the ability to use more reliable data. **Conclusions**: Lastly the BALF sample was shown to be effective for phenol red dosing with a minimum of interferents (blood, for example) and an indicator of increase in aqueous secretion in the airways by safely reflecting the expectorant capacity of drugs. **Keywords:** Airway, Bronchoalveolar fluid (BALF), Mucoative agent, Phenolsulfophthalein **Financial support:** CAPES, FACEPE, CNPq and UNIVASF. **Ethics Committee in Use of Animals (CEUA-UNIVASF):** protocol number 0006/021014.

08.028 Metformin promotes gastroprotection on alendronate-induced gastric damage in normoglycemic and hyperglycemic rats. Nolêto IRSG[1], Iles B[1], Alencar MS[1], Lopes ALF[1], Oliveira AP[1], Pacheco G[1], Sousa FBM[2], Sousa NA[1], Chaves LS[1], Medeiros JVR[1] [1]UFPI, [2]UniNassau

Introduction: Alendronateis a bisphosphonate widely used for the treatment of osteoporosis; however, one of its main adverse reactions is gastric ulcer(ADACHI, Arthritis & Rheumatism. v. 44,p. 202, 2001). Metformin is an oral antihyperglycemic agent that has several beneficial effects, including healing, gastroprotective and anti-tumoral action (HARDIE, APSB. v. 1, p.1, 2016). This study aimed to evaluate the gastroprotective activity of metformin in alendronate-induced gastric damage in-normoglycemic and hyperglycemic rats. **Methods:** Wistar female rats weighing between 180 and 200g were divided into normoglycemic negative control (physiological solution, PS 0.9%, p.o); normoglycemic positive control (PS 0.9% + alendronate 50mg/kg, p.o), three normoglycemic groups with metformin (metformin 10, 30 or 100mg + alendronate 50mg/kg, p.o), one normoglycemic group with AMPK inhibitor (Compound C 1.2mg/kg + metformin 100mg/kg + alendronate 50mg/kg, p.o), hyperglycemic negative control (PS 0.9%, p.o), hyperglycemic positive control (PS 0.9% + alendronate 50mg/kg, p.o) and hyperglycemic at the best dose (metformin 100mg/kg + alendronate 50mg/kg, p.o). Diabetes was induced with streptozotocin (STZ), 130mg/kg, intraperitoneal, single dose. The pre-treatments were performed daily for seven days and the gastric lesion was induced with alendronate 50mg/kg daily for four days. After euthanasia the stomachs were removed for macroscopic and microscopic analysis of the lesions. In addition, analyzes of myeloperoxidase (MPO), malondialdehyde (MDA), cytokine measurement, collagen dosage and production of mucus were performed. **Results:** The treatment with 100mg/Kg of metformin showed a significant gastroprotective effect ($P<0.05$) in damage induced by alendronate (50mg/Kg) in macroscopic analysis and the analysis of light microscopy and atomic force microscopy. The results suggested metformin decreased the inflammatory response by reducing the expression of proinflammatory cytokines (TNF-α, IL-1β and IL-6), myeloperoxidase activity, and malondialdehyde levels. Also, the results suggested that metformin induces the maintenance of basal levels of collagen and increase the production of mucus. Interestingly, in the presence of AMPK inhibitor (Compound C), metformin effect was prevented. The gastroprotective effect of metformin might be related to the activation of the AMPK pathway. **Conclusion:** These findings revealed that metformin has a gastroprotective action and may be considered a therapeutic potential for the prevention and treatment of gastric lesions induced by alendronate. **Support:** CAPES/CNPq/FAPEPI/UFPI **License number of ethics committee**: Ethical Committee on Animal Use/UFPI: Protocol nº 474/18

08.029 Antidiarrheal activity of the ethanolic extract of *Terminalia fagifolia* **Mart & ZUCC in cholera toxin-induced diarrhea model**. Sousa IJO, Silva VG, Costa DS, Pacheco G, Gomes JPS, Medeiros JVR, Meneses Oliveira RC UFPI

Introduction: Diarrheal diseases comprise a series of alterations caused in intestinal motility, with an increase in the number of bowel movements and a change in stool consistency. The diarrhea caused by *Vibrio cholerae*, popularly known as cholera, is one of the main forms of diarrhea caused by toxinogenic bacteria, with high mortality, affecting mainly children and elderly people in areas with a low sanitary level. Therefore, studies involving Terminalia fagifolia show that this plant has antidiarrheal activity in osmotic diarrhea and other gastrointestinal diseases. Objective: to evaluate the antidiarrheal effect of the ethanolic extract of *Terminalia fagifolia* on diarrhea caused by cholera toxin in vitro and in vivo. **Methods:** Swiss mice (25-30 g) were fasted for 18 hours before starting the procedures(CEUA-UFPI 365/17). The animals were anesthetized with ketamine and Xylazine and under anesthesia, a laparotomy was performed to expose the small intestine. There was separation of a 3-centimeter portion of the small intestine, where 1 microgram of the toxin diluted in PBS was inoculated (TRADTRANTIP, KO, VERKMAN, PLOS NTD.V.8, p.1-10, 2014). The laparotomy was sutured and after 4 hours, the animals were euthanized and analysis was performed for fluid generation, chloride levels and absorption of intestinal fluids. By means of ELISA technique, the binding between GM1 receptor and cholera toxin in medium with different concentrations of the extract (1-500 ng / ml) was verified. **Results:** The group treated with the extract showed a significant reduction in fluid generation (0.046 ± 0.003 g / cm), as compared to the control group (0.075 ± 0.011 g / cm), as well as the reduction of chloride levels (71.19 ± 1.07 mEq / L), as compared to the control group (109.3 ± 4.51 mEq / L) and also showed an increase in fluid absorption(62.02 ± 3.55% - Extract group; 35.58 ± 2,52% - control PBS group). In the ELISA test, at all concentrations studied, a reduction in the binding between toxin and GM1 receptor was observed, showing that the extract of T. fagifolia can act at receptor level, as well as in the toxin. **Conclusion**: The ethanolic extract of *Terminalia fagifolia* was able to reduce all parameters of cholera toxin - induced diarrhea and could become a future candidate for the development of a drug for this disease in the future. **Financial Support:** UFPI / CAPES

08.030 Vascular alterations induced by experimental asthma. Castro PFS[1], Clemente LP[1], Abreu LB[1], Ribeiro MTL[2], Rocha ML[2] [1]UEG, [2]UFG

Introduction: Asthma is a heterogeneous disease characterized by the inflammation of the airways. The symptoms are varied, and it has been associated with cardiac dysfunctions, such as remodeling, function alteration, mainly a type of cardiac ischemia. **Objective:** To evaluate the vascular changes induced by experimental asthma in Wistar rats. **Methods:** Induction of asthma in Wistar rats using ovalbumin. One of the tests was performed in an isolated organ bath in which the effect of sodium nitroprusside on aortic rings of asthmatic rats was characterized in the presence of L-NAME, ODQ and TIRON inhibitors. The abdominal aorta of the animals was used for calcium quantification, and the result was expressed in mg Ca2 + / mg dry weight. **Results:** The calcium quantification test for the SHAM and OVA groups presented, respectively, the following results, 0.12 mg±0.015 and 0.11 ± 0.019, (n=8), the differences were not considered significant (p> 5). In sodium nitroprusside-induced relaxation in the SHAM group, pD2 values increased significantly (p <0.01) only in the presence of ODQ (control vs ODQ = 7.29±0.16 to 7.61±0.13, respectively). In the OVA group as well as in the SHAM group, pD2 values showed a significant reduction only in the presence of ODQ inhibitor, 8.16±0.18 vs 7.53±0.03, (p<0.01). **Conclusion:** The inflammatory process induced by asthma was not able to cause changes in the aortic calcification of the sensitized animals, as well as in the vascular relaxation intracellular mechanism induced by sodium nitroprusside. The research approved by Animal Research Ethical Committee by Goias Federal University: 100/2017. **Financial support**: UEG, CNPq and FAPEG.

08.031 Protective effect of *Lonchocarpus araripensis* lectin in the mechanical respiratory dysfunction induced by polymicrobial sepsis in rats. Pires AF[1], Silva DHM[2], Assreuy AMS[2], Belo LMC[1], Rebouças BDS[2], Lopes MR[2], Laranjeira EPP[1], Sousa ARC[2], Holanda AAC[1], Cavalcante FSA[2], Cavada BSC[3] [1]Estácio, [2]UECE, [3]UFC
Introduction: Acute lung injury is a common complication of sepsis, being associated with high patient's mortality and an unspecific treatment. Many of the deleterious processes induced by sepsis involve alteration in expression of carbohydrates present in serum and cell membranes. Thus, proteins that bind specifically and reversibly to glycan structures, such as lectins, could modulate the consequences of sepsis. Based in the preventive effect of the lectin of *Lonchocarpus araripensis* (LAL) in the inflammatory process induced by sepsis in rats, this study aimed to evaluate the effect of LAL post-treatment in the mechanical pulmonary dysfunction induced by sepsis in rats. **Methods**: Wistar rats (250-300 g) were handled according to established ethical principles (CEUA No. 3156002/2017) and treated with LAL (1 mg/kg: e.v.) or sterile saline six hours after cecal ligation and puncture (CLP) or simulation of the surgical procedure (SHAM). The CLP technique was performed by ten perforations with a sterile needle (18 G) after laparotomy and cecal exposure. After 24 h the rats were anesthetized, curarized and tracheostomized to measure pulmonary mechanic (airway resistance - R_N, tissue resistance - *G*, elastance - *H*, static compliance - C_{ST}, inspiratory capacity - *I*C and pressure - volume curve area –Loop PV) on a mechanical ventilator for small animals (FlexVent). Results were analyzed by ANOVA and Bonferroni test (n = 6-10; p <0.05) and expressed as Mean ± S.E.M. **Results**: Septic rats increased airway resistance(R_N) by 61% (0,136 ± 0,036), tissue resistance (*G*) by 45% (0,852 ± 0,128) and elastancy (*H*) by 48% (4,128 ± 0,764) compared to SHAM (R_N: 0,053 ± 0,015; *G*: 0,472 ± 0,038; *H*: 2,137 ± 0,291). In addition, sepsis reduced inspiratory capacity (*CI*) (7.474 ± 0.988 mL) by 38% and static complacency (C_{ST}) (0.702 ± 0.129 mL/cmH_2O) by 32%, and increased the pressure-volume curve area by 23% (loop PV) (46.18 ± 4.546 mL), compared to SHAM (*CI:* 9.846 ± 0.690 mL; C_{ST}*:* 0.969 ± 0.136 mL/cmH_2O; loop PV: 35.36 ± 4.933 mL). LAL improved the following parameters of pulmonary mechanic of septic rats: R_N (44%), *G* (48%), *H* (45%), *I*C (27%), C_{ST} (17.6%). **Conclusion**: The lectin of *Lonchocarpus araripensis* reverses the mechanical parameters of pulmonary dysfunction in septic rats, attenuating the acute lung injury. **Acknowledgments**: CNPq. CAPES **Keywords:** Leguminous Lectin. Experimental Sepsis.Acute Lung Injury.

08.032 Adenosine receptors blockage potentiates the relaxant effects of β2-adrenoceptor agonists in rat tracheal smooth muscle. Pacini ESA, Freitas BA, Godinho RO Unifesp-EPM

Introduction: Previous work from our group has demonstrated that activation of skeletal muscle β_2-adrenoceptors (β_2-AR) increases the intracellular generation of cyclic AMP (cAMP) that is followed by the cyclic nucleotide efflux. Outside the muscle cell, cAMP is sequentially degraded by ecto-enzymes into AMP and adenosine, which in turn stimulates postsynaptic A_1 adenosine receptors leading to a negative inotropic effect (Duarte T, et al., J Pharm Exp Ther, 341:820-8, 2012). Considering the central role of the β_2-AR/cAMP signaling cascade in airway smooth muscle relaxation, the elevated levels of bronchoconstrictor adenosine in the lung of asthmatic patients, and the tolerance to the bronchoprotective effects of β_2-AR after its regular use, in the present study we evaluated the possible efflux of cAMP from tracheal tissue in response to β_2-AR stimulation and the interference of extracellular cAMP on β_2-AR-dependent airway smooth muscle relaxation. **Methods:** Tracheal segments obtained from adult male Wistar rats were isolated and mounted in a tissue bath system containing Krebs-bicarbonate solution, under optimal resting tension, at 37°C. After a 60 min stabilization period, the tissues were subjected to different protocols: a) Carbachol (CCh) precontracted tracheas were incubated with increasing concentrations of rolipram, salbutamol ± propranolol, fenoterol ± CGS-15943 or adenosine and the isometric contraction forces were recorded and analyzed. b) Tracheal rings were incubated for 60 min with 1 mM IBMX ± 1 µM fenoterol, and the extracellular cAMP collected from medium was measured using the Lance Ultra cAMP Kit (Perkin Elmer, USA). The isometric contraction forces were normalized and presented as percentage of the CCh EC_{30} response. Values were expressed as mean ± S.E.M. UNIFESP animal Ethics Committee: CEUA #9987150714. **Results:** The phosphodiesterase (PDE) 4 inhibitor rolipram and the β_2-AR agonists salbutamol and fenoterol induced relaxation of tracheal smooth muscle in a concentration-dependent manner, exhibiting distinct potencies (pEC_{50}; rolipram = 8.3 ± 0.2; salbutamol = 7.0 ± 0.1 and fenoterol = 5.9 ± 0.1) and maximum responses (E_{max}; rolipram = 81 ± 4%; salbutamol = 80 ± 4% and fenoterol = 85 ± 2%) (n=3-5). Adenosine elicited contraction of CCh pre-contracted rat trachea (E_{max} = 60 ± 1%, pEC_{50} = 4.8 ± 0.1%, n=7). Pretreatment of tracheas with 20 µM CGS-15943, a nonselective adenosine receptor antagonist, shifted the fenoterol concentration-relaxation curve 11-fold to the left (pEC_{50}; fenoterol + CGS-15943= 7.0 ± 0.2, n=3-5). In opposition, propranolol (a nonselective β-AR antagonist) shifted the concentration-relaxation curve 3-fold to the right (pEC_{50}; salbutamol + propranolol= 6.5 ± 0.4, n=3). Finally, stimulation of β_2-AR with fenoterol for 60 min increased by up to 550% the extracellular cAMP levels (basal = 1.52 ± 0.24 pmol/mg tissue, n=5-6). **Conclusion**: These results show that activation of β_2-AR induces the efflux of cAMP from tracheal cells. The ability of CGS-15943 to potentiate the relaxing effect of fenoterol indicates that the combination of β_2-AR agonists with adenosine receptor antagonists could have potential clinical use in the treatment of asthma and chronic obstructive pulmonary diseases. Financial Support: CAPES, CNPq and Fapesp # 18/21381-6.

08.033 Mechanisms of action involved in the anti-motility effect of (-) - fenchone in mice. Silva LMO, Silva AO, Alves Júnior EB, Serafim CAL, Pessoa MLS, Araruna MEC, Batista LM UFPB

Introduction: (-) - Fenchone is a bicyclic monoterpene present in the essential oils of plant species, such as *Foeniculum vulgare* (funcho/erva-doce) and Peumus boldus (boldo), used in the treatment of gastrointestinal disorders. Previous studies with fenchone has presented low acute toxicity, gastroprotective effect and antidiarrheal activity, being this last one attributed to a decrease of gastrointestinal motility. Thus, this study aimed to evaluate the anti-motility pathways involved in the mechanisms of action of the - (-) fenchone in mice. **Methods:** Male Swiss mice (Mus musculus) (n = 7) and fasted for 24 hours were used, weighing between 25-35g. Were treated with yohimbine (α_2 adrenergic receptor antagonist, 1 mg / kg), propranolol (non-selective adrenergic receptor antagonist, 1 mg / kg), L-NAME (inhibitor of nitric oxide sintase activity 25 mg / kg), glibenclamide (K_{ATP} channel blocker, 1 mg / kg) or pilocarpine (nonselective muscarinic receptor agonist, 1 mg / kg) intraperitoneally. After 30 minutes of blockade, 5% tween 80 (vehicle 10 mL / kg) or (-) - fenchone (150 mg / kg) were orally administered. Thirty minutes later, the animals received a suspension of activated charcoal (10%) in gum arabic (5%) administered orally. After 60 minutes, the animals were euthanized to calculate the percentage of intestinal transit (SANTOS F.A., Eur J Pharmacol v. 364, p.193-197, 1999). The results were analyzed using ANOVA followed by Dunnett's test (mean ± standard deviation) followed by Tukey's post-test. **Results:** (-) - Fenchone reversed the percentage of intestinal transit when blocked with L-NAME, glibenclamide, propranolol, yohimbine and pilocarpine for 85% ($p < 0.001$), 92% ($p < 0.001$), 88% ($p < 0.001$), 98% ($p < 0.001$) and 75% ($p < 0.001$) respectively. **Conclusions:** Those results suggest the participation of nitric oxide, K_{ATP} channels, muscarinic and adrenergic receptors, in the anti-motility activity, due to reversal of the effect when the fenchone was administered along with the respective blockers. Acknowledgments: CNPq / UFPB / PgPNSB / IpeFarM. Ethics Committee on Animal Use (UFPB): Protocol number 4996090518

08.034 Evidence that treatment with NaHS (A Hydrogen Sulfide Donor) ameliorates oral mucositis induced by 5-fluorouracil in hamsters. Pinho SS[1], Carvalho JL[1], Fonseca KM[1], Sousa FBM[2], Oliveira ACP[1], Sousa GC[1], Oliveira AP[1], Araújo AKS[1], Lopes ALF[1], Medeiros JVR[1] [1]UFPI, [2]UniNassau

Introduction: Oral mucositis is one of the side effects of oncologic therapy based on chemotherapy, which is characterized by inflammation in the oral mucosal region as well as the entire gastrointestinal tract. Studies demonstrate that the H_2S pathway acts by stimulating the anti-inflammatory response, being NaHS a donor of this gaseous mediator, that is produced in several tissues of mammals and performs numerous physiological functions, makes it a good candidate for the treatment of oral mucositis. The objective of this study was to investigate the protective effect of NaHS on oral mucositis induced by 5-FU (5-fluorouracil) in hamsters. **Methods:** For the present study, 30 Golden hamsters were divided into four groups: control, mechanical trauma (scratches), 5-FU and NaHS. Following the experimental protocol, animals on the 5-FU and NaHS groups received on the 1st and 2st day the chemotherapy at a dose of 40 and 60 mg/kg via i.p, whereas trauma and control only received vehicle (saline). At the day 4, the right jugal mucosa was excoriated in the trauma group, 5-FU and NaHS groups. At the day 5, the animals of test group received NaHS at a dose of 27 µM/kg orally. In this study, reduced glutathione (GSH), malondialdehyde (MDA) and myeloperoxidase (MPO) were measured, as well as differential cell counts leukocytes, nitrite and histopathological analysis. **Results:** The presence of ulcers and hemorrhages were observed in the 5-FU group, which resulted in loss of integrity of the jugal mucosa epithelium and inflammatory infiltrate in the macroscopic and microscopic analyzes when compared with the control group ($p<0.05$). However, the treatment with NaHS at the dose 27 µM/kg was able to promote the integrity of the jugal mucosa, besides intervening in the appearance of ulcers and abscesses, when compared with 5-FU group ($p<0.05$). Another important factor observed in the study was the positive effect of this molecule on the maintenance of the basal levels of GSH in the jugal mucosa ($p<0.05$) and the reduction of oxidative stress through the measurement of MDA ($p<0.05$), as well as the reduction of inflammatory parameters such as leukocytes ($p<0.05$) and MPO ($p<0.005$). **Conclusion:** Therefore, what we can infer from the present study is that NaHS at a dose of 27 µM/kg presented therapeutic potential by improving the anti-inflammatory signals in the jugal mucosa and reducing the oxidative stress due to the action of 5-FU. Thus, it can be concluded that this molecule presents potential to become a possible drug for the control and treatment of oral mucositis. **Financial Support:**CAPES/CNPq/FAPEPI-UFPI. **CEUA ProtocolNumber:**444/18

08.035 Antioxidant effect of McLTP1 in the experimental model of intestinal mucosite induced by irinotecan. Costa AD, Carmo LDD, Rangel GFP, Campos DCO, Costa AS, Oliveira HD, Alencar NMN, Rabelo LMA, Duarte RS UFC

Intestinal mucositis (IM) is a side effect that affects patients who are being treated for colorectal cancer (CRC). About 50-60% of patients undergoing chemotherapy develop IM in different degrees and the currently treatment is only palliative. *Morinda citrifolia* L., commonly known as “noni”, is a species native from Southeast of Asia, also found in northeastern of Brazil, especially in the states of Sergipe and Ceara, and medicinally used for the treatment of cancer, infections, inflammation and pain. Our research group has demonstrated that McLTP1, a lipid binding protein, isolated from the seeds of *M. citrifolia* has anti-inflammatory, gastroprotective, antibacterial and antinociceptive activity in mice. The aim of this work was to study the antioxidant effect of McLTP1 in the model of resistance intestinal mucositis induced by irinotecan (CPT-11). For induction of IM, male swiss mice (25-30 g) were divided into 5 groups. Group 1 received saline (0.9%, i.p.), once, daily, for four days. Group 2 received irinotecan (75 mg / kg, i.p.), once, daily, for four days and groups 3, 4 and 5 were treated for 7 days with McLTP1 at doses of 0.5 mg/kg, 2 mg/kg and 8 mg/kg, e.v., respectively, 30 min before CPT-11, which was administered for 4 days. During the seven days, the presence of diarrhea by scores was evaluated. On the seventh day, the animals were euthanized, the duodenum collected and determine the levels of GSH, MDA, NO, IL-1β and evaluation of the immunostaining for COX-2. For the statistical analysis, the ANOVA / Bonferroni or Kruskal Wallis / Dunns test was used and $p < 0.05$ was considered significant. This study was approved by the UFC - CEPA Animal Research Ethics Committee (93/15). CPT-11 caused diarrhea, increased MDA, NO, IL-1β, immunoblotting to COX-2 and decreased GSH. Comparatively, treatment with McLTP1 8 mg / kg improved diarrhea, decreased levels of MDA, IL-1β, immunoblotting to COX-2, and increased GSH. Therefore, McLTP1 demonstrates important antioxidant activity that makes it a promising therapeutic option to prevent and attenuate the severity of intestinal mucositis during the chemotherapy treatment with CPT-11. Acknowledgment: CNPq, CAPES, FUNCAP.

08.036 Polymeric nanoparticles carried with bixin prevent pulmonary oxidative stress and inflammation induced by cigarette smoke in murine model. Figueiredo Júnior ATF, Lanzetti MLDD, Valença SS, Finotelli PV, Anjos FF UFRJ

Introduction: *Bixa orellana* L., popularly known as annatto, is a native plant from tropical America, from Bixaceae family, which own many carotenoids derivates, terpenoids, tocotrienols and flavonoids[1]. B. orellana L. extracts are widely used as natural coloring for food and by cosmetics industries. Annatto's pigments have been target for treatment and prevention in many health disorders in animal models[2-11]. In general, these benefits are due to its capacity to inhibit oxidative stress. Bixin is the major pigment present in annatto's seeds and have an important scavenger effect[12, 13]. However, the long bixin carbonic chain turns this carotenoid highly hydrophobic what reduces pharmacokinetics parameters, as its bioavailability. These characteristics made bixin an attractive target for nanotechnology. Also, considering that pulmonary diseases are actually the third main world cause of death and there's no effective treatment, this study aimed to prepare and characterize bixin nanoparticles (npBX) and analyze if it could prevent the pulmonary damage induced by cigarette smoke. **Methods:** npBX were prepared following the interfacial deposition methodology[14], such as vehicle solution empty nanoparticles (npBL). C57BL/6 mice were exposed to cigarette smoke (CS) or kept in ambient air (AA)[15]and treated with npBX or npBL. In the sixth day the animals were euthanatized and bronchoalveolar lavage (BAL) and lungs were collected. The mean diameter and zeta potential of npBX were measured by dynamic light scattering.

Results: There was an increase of almost 300%in ROS production in smoker group (npBLCS) in comparison to both control group(npBLAA) and exposed to CS and treated with npBX group (npBXCS).npBLCS group presented 70% more leukocytes in BAL than npBLAA group, that was not seem in npBXCS group. TNF-α level was 60% increase in npBLCS group and it was similar to control in npBXCS. npBXCS group was protected against oxidative damage detected by TBARS. Nitrotyrosine expression was also reduced in npBXCS group when compared to npBLCS group. Nrf2 expression was not altered in any group. npBX showed typical size (approximately 250 nm), polydispersity index (0.22 ± 0.014) and zeta potential (-13.2 ± 1.4 mV). **Conclusion**: Polymeric nanoparticles of bixin were capable to prevent oxidative stress and inflammation in acute murine model induced by cigarette smoke through a Nrf2-indeppent manner, suggesting bixin as a pro-oxidative species scavenger. **Acknowledgments**: FAPERJ, CNPq and CAPES for the financial support. **References**: [1] S. M. Rodrigues, Mol Biotechnol, 37, 220, 2007 [2] L. Conte,J Nutr Metab, 2019, 9407069, 2019 [3] L. Xue, Toxicol Res (Camb), 7, 258, 2018 [4] M. Rojo de la Vega, Front Pharmacol, 9, 287, 2018 [5] A. D. Pinzon-Garcia, Biomed Pharmacother, 106, 363, 2018 [6] Y. Kumar, Nutr Cancer, 70, 971, 2018 [7] Z. Xu, Biomed Pharmacother, 89, 991, 2017 [8] M. Rojo de la Vega,Nutrients, 9, 2017 [9] S. Tao, Sci Rep, 6, 18760, 2016 [10] S. Tao, Free Radic Biol Med, 89, 690, 2015 [11] S. Somacal, Mol Cell Biochem, 403, 243, 2015 [12] K. C. Thresiamma,Indian J Exp Biol, 34, 845, 1996 [13] R. C. Chiste, Food Chem, 127, 419, 2011 [14] H. Fessi, International Journal of Pharmaceutics, 55, 1989 [15] M. V. Barroso, Bioorg Med Chem, 25, 5557, 2017

08.037 Eugenol modulates rat alveolar macrophages activity exposed to cigarette smoke. Oliveira MCB[1], Gonçalves MH[1], Silva FAC[1], Lanzetti M[2], Valença SS[2], Silva FS[1], Lima EKF[1] [1]UFERSA, [2]UFRJ

Introduction: Cigarette smoke can stimulate the inflammatory response in the lungs and macrophage has a key role in this response. Eugenol (EUG) is a component of clove oil, with anti-inflammatory and antioxidant activities. **Aim:**To evaluate the anti-inflammatory an antioxidant effect of the EUG in rat alveolar macrophages (RAM) stimulated by cigarette smoke extract (CSE). **Methods:** (CEUA: 23091.007638/2018-95). This study was divided in two steps (in vitro and in vivo). In vitro, RAM obtained from bronchoalveolar lavage (BAL) were suspended in DMEM and plated (1 x 10^6) (37, 5% CO2; 1h) on triplicate. The cells were exposed to different concentrations of CES (1, 2,5, 5 or 10%) to toxicity test. Others RAM were plated and exposed to different conditions (1 hour): Control or CSE 5%. The CSE group was treated with EUG (10, 30 or 100 µg/mL). *In vivo* C57BL/6 mice were exposed to 12 cigarettes per day for 5 days (CS group). The control group was exposed to sham smoking. The CS group was treated with EUG (100 mg/mL) or vehicle by inhalation (15 min/daily) for 5 days.Were evaluated the anti-inflammatory and antioxidant markers. **Results:** *In vitro* MTT test showed CSE 5% is able to cause inflammation and is the less toxic concentration. The MDA levels increased 5 x on CSE group to compared to control and reduced 38% on EUG 100 µg/mL ($p<0,05$). The SOD and CAT activity increased 4x and 42% on CSE group to compared to control and reduced 34% and 65%on EUG 30 µg/mL and 100 µg/mL, respectively ($p<0,05$). The KC levels were increased 2x when compared to control and reduced 65% when treated with EUG 100 µg/mL ($p<0,05$).In vivo, the leucocytes number from mice BAL increased 3x on CS group to compared to control and the treatment with EUG (100 mg/mL) reduced 46% when compared to CS group. **Conclusion:** The EUG is a potential compound able to modulate the inflammatory response induced by cigarette smoke may be by modulate macrophage activity.