(BDNF and NGF), microglia/macrophages marker (CD11-b) and myelin basic protein (MBP) in the spinal cord were determined by immunoblot. CRO effect on sciatic nerve was investigated through the measurement of myelin thickness using transmission electron microscopic.
Results and Discussion: CRO decreased the severity of the clinical signs of EAE. No difference was observed in MBP and BDNF expression in the spinal cord on 28th day. However, there was a decrease in the NGF in the EAE, which was not altered by CRO. Both protocols of treatment partially decreased the immunoreactivity of the Egr-1, microglia/macrophages and astrocytes markers EAE-induced. These results suggest that CRO affects the activation of glial cells, reducing the spinal nociceptive neurons activation. Sciatic nerve fibers showed increased g-ratio in 28th day on EAE group, which was not observed in the single dose treated group. These factors may explain the improvement of the clinical signs and the attenuation of neuroinflammation EAE-induced, conferring to CRO a promising agent for the control of MS. Support: CAPES, CNPq (467211/2014-0).

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SCREENING OF BRAZILIAN MARINE ANIMALS EXTRACTS ON TUMOR CELL LINE PANEL

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Introduction and Objectives: The marine environment is a good source of new molecules, few explored so far. Nevertheless, several compounds therapeutically relevant have been used in the treatment for chronic pain, arthritis, virus and tumor. Cancer is a disease caused by the disordered growth and differentiation of cells, that invade tissue and organs. High mortality has been attributed to the disease and few efficient and selective treatment are available. Thus, the search for new antitumor molecules is essential, and in this sense, the Brazilian biodiversity, especially the waters coast, can provide interesting new compounds. In this work, we have collected animals from São Sebastião (SP, Brazil) and their methanolic extracts were screened over a tumor cell panel.
Material and Methods: Animals from Phylum Porifera (*Tedania brasiliensis* and *Zygomicale* sp.), Phylum Cnidaria – Class Anthozoa (*Carijoa riisei*, *Zoanthus sociatus* and *Exaiptasia pallida*) and Phylum Cnidaria – Class Hydrozoa (*Eudendrium carneum*), were collected manually in the intertidal zone. After collected, animals were washed with artificial sea water and then immersed in methanol containing 0.1% acetic acid. The content extracted was centrifugated and the supernatant was concentrated and diluted with sterile phosphate-buffered saline to be tested (1.6 to 100 μg/mL). Samples were incubated in cultured cells of glioblastoma (U251), breast (MCF-7), ovary (OVCAR-3), resistant ovary (NCI-ADR/RES), colorectal (HT-29), leukemia (K562) and non-tumor (HaCaT). After 48 hours, the cell viability was determined by MTT assay and the IC50 was calculated.
Results and Discussion: *C. riisei* was effective in reducing the cell viability of U251 (IC50 52,9 ± 3,2 μg/mL), MCF-7 (IC 50 93,2 ± 11,9 μg/mL) and OVCAR-3 (91,9 ± 29,5 μg/mL). *T. brasiliensis* extract was able to reduce the U251 cell viability in an IC50 8,5 ± 3,5 μg/mL, while had no effect on other cell lines (including non-tumor). Other species did not cause any effects over cells. According to preliminary analysis by mass spectrometry, the extracts are composed by low molecular mass compounds (200 and 500 Da), and abundant ions are not related to described molecules. The results show interesting effects of some extracts on the reduction of tumor cell viability, with selective activity, which may be increased after the obtention of a purified molecule, the next step of this promising work.

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LYSINE- AND ARGININE-RICH VENOM-BASED PEPTIDES: COMPARISON OF LEISHMANICIDAL EFFECT

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Introduction and Objectives: Complexities in leishmaniasis chemotherapy have pointed out a real need for new therapeutic options. Cationic hydrophobic peptides reproducing small sequences of the venom phospholipase A_2 (PLA_2) structures have opened the way for promising biomedical applications, including treatments for protozoal infections. In this scenario, this work aimed to evaluate the leishmanicidal activity of two 13-mer peptides, in addition to assess their mechanism of action. The first one, a lysine-rich peptide, corresponded to the original region 115-129 sequence of Lys49 PLA_2 from *Agkistrodon* spp. venom. The second, an arginine-rich peptide was engineered based on the primary structure of the first peptide, but all seven lysine were substituted for arginine residues.
Material and Methods: Briefly, the 13-mer peptides were synthesized by Fmoc technology, isolated and characterized by reversed-phase high-performance liquid chromatography (RP-HPLC) and mass spectrometry, respectively. The leishmanicidal activity of peptides against promastigote and amastigotes from *Leishmania (L.) amazonenis* and *Leishmania (L.) infantum*, their toxic effects on host cell (macrophages) were accessed by the MTT colorimetric assay. The antiprotozoal potential was also evaluated in Leishmania-infected macrophages in vitro. Changes on fluorescence intensity due to ethidium bromide dye uptake were determined to investigate plasma membrane permeabilization induced by 13-mer peptides. All experiments involving animals were approved by the Institutional Ethics Committee (4951-1/2018).
Results and Discussion: Both synthetic peptides showed antileishmanial activity against amastigotes and promastigotes of *Leishmania* spp. Microscopic analysis showed that the lysine- and arginine-rich peptides derived from PLA_2s reduced macrophage infections and presented low host cell toxicity. The fluorescence assay indicated that the peptides interact with the protozoan plasma membrane. Our data revealed that the lysine-to-arginine substitutions improved the leishmanicidal properties and selectivity. Despite the same length, the peptides differentiate on their isoelectric points and hydrophobicity values due to the amino acid modifications. Overall, our findings confirm the valuable potential of venom-based peptides as leishmanicidal agents and provide useful insights into structure-function, which serves as scaffolds for drug design.

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IMPROVED ACTIVITY OF ANTI-CANDIDA OF PEPTIDE TISTH (*TITYUS STIGMURUS* SCORPION) ENCAPSULATED IN CHITOSAN NANOPARTICLES

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Introduction and Objectives: The *Tityus stigmurus* scorpion is predominantly found in Northeast of Brazil and is known to produce toxins with pharmacological and biotechnological applications. Our group scientific identified many bioactive peptides from the venom glands of *T. stigmurus* through a transcriptomics approach. Among peptides identified, one peptides with hypotensive action (TistH, *Tityus stigmurus* Hypotensin) showed multifunctional and biotechnological applications. The maximum efficacy of this class of compounds can be achieved by immobilizing it in specific and suitable biomaterials or carriers. Therefore, this study proposed to produce TistH-loaded cross-linked chitosan nanoparticles for incorporation method (CN-TistH-Inc) by ionotropic gelification technique and evaluated the improve of anti-*Candida* activity *in vitro*.
Material and Methods: Physico-chemical characterization, such as particle size, polydispersity index (PdI) and zeta potential were performed by dynamic light scattering. The encapsulation efficiency (EE) was determined through bicinchoninic acid method and the morphology of the nanoparticles was assessed by atomic force microscopy (AFM) and field emission gun scanning electronic microscopy (FEGSEM). The antifungal effect was realized through of determination of the minimum inhibitory concentrations (MIC) and minimum fungicidal concentrations (MFC), used the peptide TistH, chitosan nanoparticles, CN-TistH-Inc at 0.5 and 1.0% against species of