compounds on *L. braziliensis* promastigote forms. Our results revealed that the test compounds were able to (i) inhibit the zinc-metallopeptidase (gp63) activity, one of the main virulence factor of *Leishmania*; (ii) bind to parasite DNA, inducing alteration in its cell cycle; (iii) arrest the parasite motility, as a consequence of reducing the activity of mitochondrial dehydrogenases and depolarization of the mitochondrial membrane; (iv) induce several morphological changes, as observed by optical and scanning electron microscopies; (v) trigger intracellular oxidative stress, culminating in parasite death by apoptotic-like pathway. Moreover, the pre-treatment of promastigotes with sub-inhibitory concentration of the phendione-derived compounds blocked their interaction with hamster macrophages, while the treatment of infected macrophages significantly reduced the number of intracellular amastigote. To finalize, hamsters infected with promastigotes were cured after the treatment with the test compounds, particularly the copper-derivative that considerably reduced the feet's lesions and the number of parasites in the feet and lymph nodes. Coordination of phendione to silver and copper represents a new promising group of anti-infective agents, which revealed a potent anti-*Leishmania* action.

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B03 - Preparation and characterization of magnetoliposomes based on cobalt ferrite nanoparticles

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Magnetoliposomes result from the encapsulation of magnetic nanoparticles into liposomes. These system combine the amazing physical properties of these two types of particles and preserve the magnetic properties of the magnetic nanoparticles. In this work, magnetic nanoparticles of cobalt ferrite ($CoFe_2O_4$) have been synthesized by the coprecipitation method. Then the nanoparticles were coated with chitosan using a chemical cross-linking method. In this method; during the adsorption of cationic chitosan molecules onto the surface of anionic magnetic nanoparticles with electrostatic interactions, tripolyphosphate (TPP) is added for ionic cross-linking of the chitosan molecules with each other. The characterization of synthesized nanoparticles with and without chitosan was performed by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Scanning electron microscopy (SEM), dynamic light scattering (DLS), thermal gravimetric analysis (TGA), and vibrating sample magnetometry (VSM) analyses. X-ray Diffraction (XRD) confirmed the formation of single phase cobalt ferrite nanoparticles with a size distribution of 18 nm approximately. The obtained cobalt ferrite nanoparticles exhibit a ferrimagnetic behaviour at room temperature with a saturation magnetization of 38,1 emu/g and a coercivity field of 1034Oe. Subsequently, the nanoparticles of $CoFe_2O_4$ coated with chitosan will be synthesized incorporating rhodamine and encapsulated in giant liposomal vesicles (GUVs). Through the latter procedure it is intended to detect the location and distribution of fluorescent nanoparticles by fluorescence and confocal microscopy.

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B04 - LOW LEVEL LIGHT THERAPY ON BREAST TUMOR. IN VITRO AND IN VIVO STUDIES

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Low Level Light Therapy (LLLT) has been gaining prominence in health areas due to search for less invasive and cost-effective treatments. However, its use is not indicated to treat patients with cancer due to a few studies in vivo. The aim of this work was to evaluate the effects of LLLT on breast tumor 4T1 cells *in vitro* and in a murine model. For the *in vitro* assay, 4T1 cells were submitted to a single session of LLLT with red light (660 ± 20 nm) delivering energies of 1.2 J and 6 J. The cell viability was measured by MTT assay. For *in vivo* study, nine BALB/c female mice (6 weeks old) received 4T1 cells transfected with luciferase (4T1-Luc) into the mammary fat pad. After two weeks, the animals were divided into control (n=3) and test groups were submitted to LLLT with same parameters described above. The tumor progression was monitored by a caliper and bioluminescence. The anti-fatigue effect of LLLT was assessed by a forced swimming test. Our results showed that LLLT was not able to increase cell viability regardless the energy used. *In vivo*, the lower energy promoted an increase of the tumor volume compared to control group. On the other hand, the higher energy was able to arrest tumor progression as well as increase the swimming time. Taken together, our results suggest that LLLT triggers opposite effects on breast tumor depending on the type of assay.

B05 - ZIKA NS2B EPITOPE AS A CANDIDATE FOR DIFFENTIAL DIAGNOSIS

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The major public health risks associated with the Zika virus (ZIKV) pandemic infection are neurological disorders, such as Guillain-Barré syndrome and congenital abnormalities. Due to the lack of vaccines and antivirals, the treatment remains non-specific. Efficient diagnostic tools can help stopping the virus spread and guide prophylactic and therapeutic interventions, however, the main in the field is the structural conservation among Flaviviruses, which results in high cross-reactivity in serological tests. We postulate that the identification of ZIKV specific epitopes is crucial for the development of effective differential diagnostic assays. To this aim, a high-density peptide array was synthesized by printing the whole proteome of ZIKV, under the form of 15-mers peptides, on a microchip and tested against 192 serum samples from ZIKVinfected individuals with and without Dengue – DENV background. The analysis of the IgG antibody profiles allowed the identification of a peptide sequence corresponding to the ZIKV NS2b protein specifically recognized by 71% of the ZIKV positive sera. The immunoreactivity of this epitope was further confirmed by ELISA, which showed that the identified peptide can partially discriminate ZIKV from DENV infections. Quantitative analyses using Microscale Thermophoresis (MST) was used to determine the antibody binding affinity of specific IgG antibodies to the NS2b peptide. The MST data showed that ZIKV-specific antibodies recognize the NS2b peptide with higher affinity (at least two orders of magnitude higher), when compared to cross-reacting antibodies from DENV-infected individuals. Future work will involve the engineering of this epitope in its native-like structure into a scaffold protein aiming to improve its recognition by specific antibodies. Ethical Committee approval numbers: 15580013.5.1001.5534 and 28309414.9.3001.5201.

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B06 – SERUM ALBUMIN AS CARRIER OF PROTOPORPHYRIN IX USED IN PHOTOCHEMOTHERAPY

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Photochemotherapy is a technique used in the treatment of cancer by applying light to induce photosensitizers (PS) to produce reactions that lead to death of the cell onto which PS are attached. The use of a carriers to bring PS to diseased tissues would improve their selectivity. In this sense, serum albumin can be an option as a carrier once it is abundant in the living tissue and has affinity to these cancer cells[a]. In the present study, we studied the interaction between bovine serum albumin (BSA) and two types of Protoporphyrin XI (PpIX) used as PS: synthetic and endogenous extracted from Harderian glands of rats. The use of BSA is justified by its similarity with Human Serum Albumin (HSA). PpIX is an intrinsic photosensitizer of the human body, emits strong fluorescence, has effective production of singlet oxygen which makes it an efficient PS. Changes in the profile of optical absorption spectra and fluorescence emission and decay of lifetime show that BSA binds to PpIXs, but these photophysical changes do not impair efficiency. Particle size measures at pH 4.5 and 7.3 were carried out. The results showed the formation of BSA/PpIX complexes depending on BSA concentration with sizes ranging from 5-1000 nm, for both PS. The formation of the complex was favored at pH 4.5, close to the BSA isoelectric point, [a] WUNDER, A.; MÜLLER-LADNER, U.; STELZER, E. H. K.; et al. Albumin-based drug delivery as novel therapeutic approach for rheumatoid arthritis. Journal of immunology (Baltimore, Md.: 1950)

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