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G.33- Synthesis, characterization, and study of the antimicrobial potential of dimeric peptides derived from the C-terminal region of Lys49 phospholipase A2 homologs

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Currently, the search for new alternatives to conventional antibiotics to combat bacterial resistance is an urgent task, as many microorganisms pose a threat to human health due to increasing bacterial resistance to conventional medicines. Thus, new molecules such as antimicrobial peptides have emerged as promising alternatives because of their low induction of resistance and broad spectrum of action. In this context, in a past years our research group synthesized and characterized a peptide derived from the C-terminal region of the Lys49 PLA2-Like BthTX-I, named p-BthTX-I. After several works, the peptide (p-BthTX-I)¬2K was proposed as a molecule with the biggest biotechnological potential (Santos-Filho et al., 2021a). Then, the purpose of the present work was to evaluate whether the modifications made on the peptide (p-BthTX-I)¬2K can be applied to other molecules originating from the C-terminal region of PLA2-like Lys49 from snake venoms. Peptide synthesis were performed using solid-phase peptide synthesis (SPPS) technique. The antibacterial activity assay was conducted using broth microdilution technique. and the mechanism of action was studied using large unilamellar vesicles (LUVs). Biochemical and functional characterization was carried out using circular dichroism technique and mass spectrometry. Peptides were obtained through solid phase peptide synthesis technique, and analogs were named respectively as: (p-MtII)2K, (pEM-2)2K, (p-ACL)2K, and (p-AppK)2K. Antimicrobial activity against ESKAPE strains was realized. All synthesized peptides showed antibacterial activity, especially peptides (p-ACL)2K and (p-AppK)2K, which exhibited bactericidal or bacteriostatic activity against all tested strains. Only (pEM-2)2K showed Hemolytic activity. Modifications initially proposed for the (p-BthTX-I)2K peptide were shown to be applicable to other peptides derived from LYS49 PLA2-Like from snake venoms, showing promising results for antimicrobial activity. Future assays comparing the activity of the dimers obtained through this strategy with the monomers of these peptides should be carried out. Keywords: peptides synthesis, p-BthTX-I, PLA2-Like

G.34- Effect of BNT162B2 Vaccination Therapy on the Cardiovascular System in Offspring of wistar Rats: Preliminary Data

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COVID-19 garnered global attention as a significant pandemic between 2019 and 2021, leading to widespread mortality. The urgent need for a safe and effective vaccine was underscored by the escalating death toll. Among the systems affected by COVID-19, the cardiovascular system emerged as crucial due to the potential development of myocarditis, an inflammation of the myocardium linked to SARS-CoV-2 infection. Additionally, reports of post-vaccination myocarditis following COVID-19 vaccination have heightened concerns, particularly among pregnant women, for whom any substance administration during pregnancy could pose risks to offspring. Given the limited research in this area, this study aimed to investigate the impact of BNT162B2, an mRNA vaccine, on the cardiovascular system of offspring whose mothers underwent vaccination therapy. This project, approved by the ethics committee under protocol number 002/2022-UERN. The vaccination therapy for mothers consisted of four doses: two doses administered before mating and two doses administered after confirmation of pregnancy. The dosage used was identical to that administered to humans.We conducted electrocardiograms and collected organs for macroscopic and microscopic analysis in adult male offspring of Wistar rats. Preliminary findings suggest no discernible influence of BNT162B2 vaccination therapy during pregnancy on the cardiovascular system of the offspring. However, ongoing analyses are underway, and further results must be examined to draw conclusive insights. This study contributes to the understanding of the effects of COVID-19 vaccination during pregnancy on offspring cardiovascular health, providing valuable insights for future research and clinical practice. Keywords: Cardiovascular System, BNT162B2, Offspring