20TH CONGRESS OF THE INTERNATIONAL UNION FOR PURE APPLIED BIOPHYSICS (IUPAB)

50TH ANNUAL MEETING OF THE BRAZILIAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY (SBBQ)

45TH CONGRESS OF BRAZILIAN BIOPHYSICS SOCIETY (SBBF)

13TH BRAZILIAN SOCIETY ON NUCLEAR BIOSCIENCES CONGRESS

PROGRAM AND ABSTRACT BOOK

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Ilustração da Capa: Alexandre Takashi

CB - Biotechnology and Biomaterials (agricultural, human and animal)

CB.01 - A new approach for purification of the catalytic site of the Angiotensin Conversion Enzyme, N domain, mediated by the ELP-Inten system

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Angiotensin-converting enzyme I, ACE, is a key part of the renin-angiotensin system whose main function is to regulate blood pressure and balance of salts in the body. ACE1 has two isoforms, somatic, sACE, and testicular, tACE. sACE possesses two domains, N- C-, with catalytic sites which exhibit 60% sequence identity. These domains differ in terms of chloride-ion activation profiles, rates of peptide hydrolysis and sensitivities to various inhibitors. N-domain has specific action in the hydrolyze of Alzheimer's diseases beta amyloid bodies and angiotensin 1-7, which active the MAS receptor and triggering anti-thrombotic and anti-inflammatory actions. The objective this work was to obtain catalytic site Ala361 to Gli468 of the N-domain region, csACEN, isolation without chromatographic and denaturant chemical process. For that, a new methodology was used in the expression of the csACEN peptide, in which the peptide was linked to the elastin-like polypeptide, ELP, and Intein, and expressed at 37C. The characterization of catalytic site was made by SDS-PAGE and dot blotting. The culture temperature at 37C significantly increased the expression of the ELP/Intein/csACEN fusion protein. This culture was lysed at a low temperature allowing the fusion protein to become soluble. The precipitation of ELP at high concentrations of ammonium sulfate were obtained in 0.57 M and 0.8 M. Intein autocleavage occurs at acidic pH and it is important to pay attention to: pI 6.65 for csACEN and pI 6.87 for ELPcsACEN, which are very low. The best autocleavage efficiency was with MES and TriHCl buffers, pH 6.3 and 6.8, respectively, in which pure csACEn peptide was obtained. The strategy used to obtain the Ala361 to Gli468 catalytic site in soluble and pure form was obtained with success and the protocol for obtaining similar peptides was established. **Keywords:** N Catalytic site of ACE1, elastin-like polypeptide/Intein, high temperature of cultivation

CB.02 - Entrepreneurial university: the search for transfer of technology from a schistosomiasis diagnostic kit.

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Schistosomiasis is a neglected tropical disease caused by the helminth infection from species of the genus Schistosoma. Globally, it is estimated that the disease affects over 250 million people in 78 countries of the world and is responsible for some 280,000 deaths each year. In the Americas, the only pathogenic human schistosome species is *Schistosoma mansoni* (*S. mansoni*). Available methods for the diagnosis of schistosomiasis comprise microscopic, molecular and serological approaches, with the latter detecting antigens or antibodies associated with *S. mansoni*. Throughout the last decades, efforts are aimed at developing news strategy for diagnostic to be used especially for low intensity infections in lowly endemic areas. With a view to innovation and technology transfer from the university to the private company, the objective of this work is to evaluate the optimization parameters of an ELISA diagnostic kit using rationally designed chimeric proteins. Thus, one of the steps evaluated was coating buffer using PBS pH7.2, Tris-HCl pH8.5 and coating buffer provided by the company were used. The conditions established for the ELISA were: 96-well polystyrene microplates, concentration of protein 140ng/well, dilution of serum 1:20, the conjugate was an anti-IgG antibody peroxidase-conjugated dilution of 1:5.000 (v/v), and measure the absorbance at 405 nm. The ratio of positive to negative was used to determine which of them is the best to discriminates the samples. The Tris-HCl pH 8.5 coating buffer showed the best discrimination between positive and negative samples when used SM1 protein; however, the company's coating buffer was better to discriminate the same samples groups when used SM2 protein. In this way, SM2 protein is more advantageous than SM1 protein and it had better results with the company's coating buffer standardized. In conclusion, the protein SM2 is a potential tool to be investigated for schistosomiasis diagnosis on an industrial scale. **Keywords:** S. mansoni, innovation, diagnosis. **Supported by:** UFSJ, CNPq, and Capes