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Production of plasmid DNA vaccine against leishmaniasis in bioreactor batch culture

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The World Health Organization has classified the leishmaniasis as a major tropical disease, affecting 12 million people worldwide. An effective vaccine is not available and the chemotherapy is the only effective way to treat all forms of this disease, but it is toxic and expensive. The use of plasmid DNA in experimental vaccines, for viral, bacterial and parasitic diseases, has increased significantly in the last decade. Therefore, the development of plasmid DNA production and purification process are important for the vaccines development, to comply with the required doses (milligram scale) for clinical trials. The aim of this work is to improve the production of pVAX-NH36, a plasmid DNA vaccine candidate against leishmaniasis (Gamboa-León et al., 2006) by the optimization of media and growth strategies to improve biomass, plasmid yield and quality. First, *Escherichia coli* DH5α harboring the pVAX-NH36 was growth in two media, M1 and M2, in 1 L bioreactor at 30 and 37°C, maintaining the dO_2>30%. The best plasmid production was obtained with M2 medium at 37°C (140 mg/L and 5.5 mg/g). The volumetric and specific plasmid yields were increased up to 590 mg/L and 20.22 mg/g respectively by the optimization of M2 medium (M3), at 37°C and maintaining the dO2>30%. Authors acknowledge the support of CINVESTAV, Instituto de Ciencia y Tecnología del Distrito Federal (ICyTDF) grant PIFUTP08-108 to JOL and CONACyT for scholarship 172926 to FIL.

Biography

Fabiola Islas Lugo is student of Ph.D in CINVESTAV-IPN México