Development of a Chimeric Protein from HPV16

Morale, M.G.[1], Chaves, A.A.M.[1], Ho, P.L.[1].
[1] Centro de Biotecnologia, Instituto Butantan, São Paulo, Brazil

Human papillomavirus (HPV) associated with cancer are classified as high-risk types, with HPV16 being the most prevalent in the general population, accounting for approximately 50% of all cervical cancers. Cervical cancer is the second most common cancer among women worldwide, most cases occurring in developing countries. Consequently, it is of great importance the development of vaccines for the prevention and treatment of diseases associated with HPV. When regressions in lesions associated with papillomavirus were observed, there were evidences that an immune response against proteins E6 and E7 was correlated with disease eradication. Thus, E6 and E7 are the most interesting proteins for the production of therapeutic vaccines due mainly to their performances in the progression of the disease. Our objective is to express in *E. coli* a synthetic fusion protein between epitopes of E6 and E7 of HPV16 and Ubiquitin, in order to enhance peptide presentation to the immune system and avoiding the development of cancer cells. After the analysis and selection of the regions of interest, the fusion sequence of proteins E6-E7-Ubiquitin was synthesized by GenScript. Then, this sequence was cloned in a bacterial expression vector. Analysis by restriction digestion and DNA sequencing revealed that the vectors with E6E7Ub and with just E6E7 were successfully produced. These vectors were used for protein expression. The E6E7Ub was expressed as an insoluble product in inclusion bodies, while the E6E7 protein was expressed as a soluble protein. Both proteins were purified with nickel columns. Currently, we have started refolding experiments of the E6E7Ub protein and we will test the ability of these proteins to stimulate the regression of tumors caused by HPV16.

Keywords: HPV16, cervical cancer, vaccine.

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