Expression and Purification of Human Papillomavirus 16 (HPV-16) L1 Protein

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Human Papillomavirus (HPV) are responsible for a wide variety of clinical manifestations ranging from benign warts to cervical cancers. They are classified in high-risk, probably high-risk or low-risk, according to their ability to drive the infection to carcinogenesis. Among the types of papillomavirus, HPV-16 is found in 70% of cervical cancers. The L1 protein is major capsid protein with 55KDa, and has conformational epitopes that stimulates neutralizing antibodies production against papillomavirus. The protein self-assembles in particles similar to virus, known as Virus Like Particles (VLPs) which are the basis of currently vaccines licensed. The aim of this study was to set up a purification protocol for L1 protein of HPV-16 expressed in *Pichia pastoris*, for the development of the Brazilian profilatic vaccine against HPV-16. The L1 protein was cloning in pPICHOLI vector and confirmed by sequencing. Through the induction of small-scale cultures, positive recombinant yeasts were selected. Then the purification was performed from 1 L of culture and confirmed the expression of L1 as a 55 KDa protein band, the expected size of L1 protein. The protein was eluted from Heparin-Sepharose column in all aliquots analyzed, from 0.4 to 2.0M of NaCl. The L1 protein of HPV-16 was partially purified. Further studies have to be performed in order to improve the purification of L1 for vaccine development.

Key-words: Human Papillomavirus, L1 protein, Virus Like Particles (VLP)

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