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Cloning and Expression of Azurin: A Protein Having Antitumor and Cell Penetrating Ability

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Abstract : Cancer has become a wide spread disease around the globe and takes many lives every year. Different treatments are being practiced but all have potential side effects with somewhat less specificity towards target sites. Pseudomonas aeruginosa is known to secrete a protein azurin with special anti-cancer function. It has unique cell penetrating peptide comprising of 18 amino acids that have ability to enter cancer cells specifically. Reported function of Azurin is to stabilize p53 inside the tumor cells and induces apoptosis through Bax mediated cytochrome c release from mitochondria. At laboratory scale, we have made recombinant azurin through cloning rpTZ57R/T-azu vector into E.coli strain DH-5α and subcloning rpET28-azu vector into E.coli BL21-CodonPlus (DE3). High expression was ensured with IPTG induction at different concentrations then optimized high expression level at 1mM concentration of IPTG for 5 hours. Purification has been done by using Ni+2 affinity chromatography. We have concluded that azurin can be a remarkable improvement in cancer therapeutics if it produces on a large scale. Azurin does not enter into the normal cells so it will prove a safe and secure treatment for patients and prevent them from hazardous anomalies.

Keywords : azurin, pseudomonas aeruginosa, cancer, therapeutics
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