

Violacein as a Bioactive Compound of Microbiological Origin - Bioproduction and Anti-Melanoma Activity

Patrycja Kowalska*, Beata Gad, Anna Sobiepanek, Tomasz Kobiela and Małgorzata Milner-Krawczyk
Faculty of Chemistry, Warsaw University of Technology, Poland

Violacein is an organic chemical compound that is derived from indole. Microorganisms capable of producing violacein are characterized by a dark purple coloration of the colonies. As shown in recent years, this compound has antibacterial, antifungal and anticancer properties. Studies on violacein's influence on various cell lines, conducted by many independent teams, indicate that it acts on tumor lines in small concentrations, and the mechanism of its action is depended on the cell type. In some cases, violacein induces apoptosis in cancer cells without affecting normal cells.

We isolated new strain, capable to violacein bioproduction. On the basis of comparative analysis of the 16S rRNA coding sequence the strain was classified as *Janthinobacterium lividum* (KP16). We established optimal culture conditions, as well as extraction and purification methods of this intracellular secondary metabolite: 2-fold diluted lysogenic broth (LB) as a growth medium and 5 days culture at 15 – 20 °C with shaking at 110-120 rpm. The obtained methanolic extracts were purified in the system of acetone : chloroform : ammonia (1 : 2 : 0.01) on a silica beads (Silica gel 60 with grains 0.015 - 0.040 mm). After optimizing the extraction and purification methods, the violacein was obtained with a purity of over 95%. Subsequently, studies concerning proliferative and metabolic activity of violacin-treated melanoma cell lines were performed. The results showed a clear selective effect of violacein on metastatic cells.

Biography:

Patrycja Kowalska is currently a MSc.Eng. student at the Warsaw University of Technology. She is going to specialized in Medicine and Cosmetics at Faculty of Chemistry WUT. She earned her Bachelor's Engineering degree in Biotechnology at the Warsaw University of Technology, Faculty of Chemistry, Poland. During her BSc studies she started working with Ph.D. Małgorzata Milner-Krawczyk in the field of bacteria biotechnology and violacein bioproduction. Nowadays studies ordinance on cell lines studies and potentially used of violacein.