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Use of prodigiosin for targeted drug delivery

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Prodigiosin is a secondary metabolites produced by Serratia marcescens. It shows different colours in different media. Investigations were made in the present study to screen different strains of Serratia sp. in different medium that effectively produce prodigiosin. Prodigiosin has wide range of biological activities, including activities as antimalarial, antifungal, immunosuppressant, and antibiotic agents. It triggers apoptosis of malignant cancer cells. It also has phosphatase inhibition, cleavage of double stranded DNA by Cu++. That's why prodigiosin is a highly promising drug and is currently in preclinical phase study for pancreatic cancer treatment. It was observed that maximum amounts of prodigiosin were synthesized in either minimal or complete medium after incubation of cultures at 27-300C for 5 days. Almost none or very little prodigiosin was produced when cultures were incubated at 420C. Optimal concentration of casein hydrolysate for pigment formation by suspensions was 0.4% and the optimal temperature was 280C. Suspensions of washed cells forming pigment reached pH 8.0 to 8.3 rapidly and maintained this pH throughout incubation for 7 days. By this procedure utilizing a shift down in temperature, biosynthesis of prodigiosin by washed cells could be separated from multiplication of bacteria. The parameters viz., temperature, pH, sugar substrate and oil substrate were optimized to increase the production of prodigiosin. It was observed that maximum amount of prodigiosin was produced at temperature 30°C and pH 7. Oil substrates play a crucial role in prodigiosin production. Among the various oil substrates used the production of prodigiosin was increased when the medium was amended with peanut oil. Isolation of prodigiosin was done with a nonpolar solvent like chloroform or by column chromatography. Since Prodigiosin is a highly useful drug can be used for targeted drug delivery with the help of porous polymeric aromatic frameworks (PAFs) or by soft oxometallates.(SOMs). PAFs consist of high porosity and surface area, as well as high physicochemical stability which are important in the design of heterogeneous catalysts with high catalytic efficiency and recyclability.

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