Production, optimization and characterisation of chitosanase of Bacillus sp. and its applications in nanotechnology

ABSTRACT

Chitosanases is a class of enzymes which hydrolyse chitosan, a natural biopolymer consisting of d-glucosamine in various degrees. In this study, chitosanase producing Bacillus sp. was isolated from soil sample. Chitosanase production was optimized using response surface methodology and the produced chitosanase was characterized. The crude enzyme was found to possess antibacterial and antifungal activity. Chitosanase enzyme was used for trimming chitosan based polymeric nanoparticles produced using sodium trimetaphosphate chelator. Chitosanase enzyme was also utilized for synthesis of silver nanoparticles which were then characterized by UV–Vis, FTIR, SEM, TEM and AFM. The produced nanoparticles were checked for antibacterial and antifungal activity.

Keyword: Chitosanase; Optimization; Characterization; Silver nanoparticles production