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Degradation of chitin using chitinase produced from molecular identified bacteria

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Chitin and chitinolytic enzymes are gaining importance for their biotechnological applications. Chitinases contribute to the generation of carbon and nitrogen in the ecosystem and can inhibit the growth of many fungal diseases that pose a serious threat to global crop production. The aim of this study was production and characterization of chitinase enzyme from bacteria isolated from western region, Saudi Arabia for biocontrol of some fungal pathogens. Colloidal chitin from shrimp shells was prepared and used for isolation of chitinolytic bacteria on Mineral chitin agar medium from different sources. The most active isolates were AMM1 which was characterized and identified as Alcaligenes aquatilis using 16S rRNA. Maximum enzyme production was carried out at 35°C, using mineral chitin broth medium B (pH 7.0), containing yeast extract (5 g/l) and glucose 2.5 (g/l). The highest growth in the chitinase production was recorded using medium with 15 g/l chitin and inoculated with 6x106 CFU/ml. The enzyme was extracted, purified and characterized. Maximum chitinase activity was at 35°C, pH 7. It was found that the pure enzyme was affected by presence of some heavy metal ions. In conclusions, chitinase was produced from bacteria, purified and characterized for medical uses and biocontrol process.