

AMYLASE ACTIVITY OF SELECTED BACTERIAL AND FUNGAL STRAINS

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Enzymes are crucial for industrial applications as they are involved in various biological reactions. The present study determined the amylase activity of selected bacteria and fungus isolated from a municipal garbage dump near the Vincent Dias Stadium, Badulla. Twenty-seven bacterial (B1 – B27) and five fungal (F1 – F5) strains from a culture collection used in a previous study were used. Bacterial and fungal strains were cultured in Nutrient Agar medium and Potato Dextrose Agar medium, respectively. The bacterial and fungal strains were then re-cultured in Nutrient Broth (NB) and Potato Dextrose Broth (PDB), respectively, before performing an enzymatic assay. After four days, the culture medium was collected and centrifuged to obtain cell-free supernatants as crude amylase. Then, the activity of crude amylase was tested in a well-diffusion assay conducted in Starch Agar medium by following the CRD with triplicates. The NB and PDB were used as controls for bacterial and for fungal strains, respectively. The diameter of the halo zone around the wells was measured and analysed by ANOVA. The bacterial strain B8 showed the highest diameter among bacterial strains (3.40 cm), and F2 showed the highest diameter among fungal strains (3.13 cm). For testing amylase activity of B8 and F2 with time, B8 was re-cultured in NB, and F2 was re-cultured in PDB. The crude enzyme extracted from the subsamples collected from each medium within 6 h time intervals was used to digest starch. The amount of sugar formation after the starch digestion was evaluated by the DNSA method. The B8 showed the highest amylase activity (0.41 AU) at 30 and 54 h of incubation, whereas F2 showed the highest amylase activity (1.69 AU) at 78 h of incubation. Accordingly, the amylase activity of F2 is higher than that of B8. Therefore, among these 32 strains, F2 of this study can be recommended to extract amylase enzymes efficiently for industrial applications.

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