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Research article

ACTIVITIES OF CMC-ASE AND β-GLUCOSIDASE IN CELLULOLYTIC BACTERIA FROM BUFFALO RUMEN GROWN ON CARBOXYMETHYL CELLULOSE

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Abstract

Cellulase is an enzyme widely used in the feed and food sectors. This study aims to examine the CMC- ase and β- glucosidase activity of cellulolytic bacteria in degrading cellulose content in CMC substrate and determine the optimum incubation period to produce cellulase enzymes from buffalo rumen bacteria. This study used a factorial Completely Randomized Design (CRD) consisting of 2 factors and 4 replications. The first factor is the type of bacterial isolate consisting of 2 types, namely ST6 and ST8. The second factor is the difference in the incubation period consisting of 5 treatments (T0: 0 days, T1: 3 days, T2: 6 days, T3: 9 days, and T4: 12 days) on the use of 1% CMC (Carboxy Methyl Cellulose) substrate. The data were analyzed using variance (ANOVA) and further tested using Duncan's Multiple Range Test (DMRT). The results of data analysis showed that CMC-ase activity was influenced by the incubation period with the best incubation period at 9 days (T3), and there was a significant interaction between the type of isolate and the incubation period. The activity of the β- glucosidase was influenced by the type of isolate and the incubation period, with the best results at an incubation period of 6 days. The interaction between the isolate type and the incubation period significantly affected the activity of the β- glucosidase.