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PRELIMINARY STUDIES ON α-AMYLASE PRODUCTION FROM *BACILLUS LICHENIFORMIS* 6346 BY SOLID STATE FERMENTATION

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α-Amylase is used in the starch industry in the preparation of glucose and other sugars having different dextrose equivalents. The submerged fermentation process needs close control of the conditions and is expensive. In Jaffna, where there is no continuous electricity supply is unavailable; it is advantageous to carry out solid state fermentation than the submerged fermentation. Hence, solid-state fermentation was selected to produce α-amylase. *Bacillus licheniformis* 6346 was grown in a basic medium containing paddy husk (35g) and 50ml of 0.04M phosphate buffer (pH 7.0) containing 1.13g of $(NH_4)_2HPO_4$ at 42°C. The α-amylase activity obtained was 139 μmole/g/min. When paddy husk was replaced with either rice bran or parboiled rice bran the α-amylase activity obtained was 24.5 and 63.7μmole/g/min respectively. To the cultivation medium (100g) containing paddy husk (30g), rice flour (1g), soy meal flour (3.2g), gingili oil (0.9ml), coconut oil (0.3ml), $(NH_4)_2SO_4$ (0.65g) and water (44ml), and inocula prepared (20ml) by different methods were mixed. The inocula were prepared by inoculating 2 loops of *Bacillus licheniformis* from slants to 25ml of activation medium (containing $250gl^{-1}$ nutrient broth and $3gl^{-1}$ soluble starch) and incubating by keeping first set stationary while the second and third sets under aeration (60 bubbles/min) and shaking (100 rpm) at 42°C for 24h. Highest activity was obtained with the medium inoculated with the inoculum prepared under stationary conditions. When the rice flour (1g) was replaced with the same amount of wheat flour, maximum activity obtained was 1483 μmole/g/min on 4^{th} day. When the rice flour substituted with wheat flour containing cultivation medium was supplemented with different amounts of soy meal powder (0.8 to 5.6g), the highest α-amylase activity (1516.9 μmole/g/min) was obtained on the 4^{th} day in the medium containing 4.0g of soy meal powder. The control medium was the cultivation medium containing rice flour substituted with wheat flour and supplemented with 4.0g of soy meal powder and the test medium contained soy meal powder replaced with soy bean flour (6g), which contained equal amount of protein as that of soy meal powder. The α-amylase activity obtained in the control and test media was 1464 μmole/g/min and activity obtained in the control and test media were 1464 and 1559 μmole/g/min respectively. Thus the optimum medium for α-amylase production from *Bacillus licheniformis* 6346 at 42°C and pH 7.0 should contain paddy husk (29.2g), wheat flour (1g), soy bean powder (6g), gingili oil (0.9ml), coconut oil (0.3ml), $(NH_4)_2SO_4$ (0.65g) and water (44ml).