

ABSTRACT

The present research work is concerned with the production of α -amylase by bacterial co-culture. For this purpose solid state fermentation technique was employed. Mono and mix-cultures of three *Bacillus* spp. i.e., *B. subtilis*, *B. licheniformis* and *B. amyloliquefaciens*, were tested for the α -amylase production. Among all combinations, co-culture of *B. amyloliquefaciens* and *B. subtilis* gave better yield of α -amylase. The α -amylase production was optimal when fermentation flask, inoculated with 1.0 ml of vegetative inoculum (at ratio of 1:1 for both species) incubated for 72 h. Among 11 different diluent tested, M2 (containing g/l: nutrient broth 10.0 soluble starch 10.0, lactose 5.0, NaCl 5.0 and CaCl₂ 1.0) was found to be optimal for the production of α -amylase by co-culture of *B. subtilis* and *B. amyloliquefaciens*. Wheat bran (5.0 g) in combination with potato peel (5.0 g) when moistened with 10 ml of M2 diluent proved as best solid substrate for bacterial growth and subsequent production of α -amylase. Cultural conditions such as initial pH (6.5) and incubation temperature (37°C) were also optimized. The extraction of α -amylase was maximum when pH of the extraction buffer was kept 7. The production of α -amylase was maximum (1125 \pm 7.071U/g/min) when M2 diluent was supplemented with starch and yeast extract 1 and 2 %, respectively.