

ABSTRACT

The present study deals with the production of beta carotene using *Aspergillus* sp.FBN-1. For this purpose various agro-industrial wastes used for cost-effective input for β -carotene production. Soya bean, rice polish, wheat bran, and potato peel powder in combination with nitrogenous sources such as Ammonium Sulphate, Ammonium nitrate, Peptone, Urea and Yeast extract with different ranges under different settings were investigated by submerged fermentation approach using *Aspergillus* sp. FBN-1. An optimized aqueous substrate with 10 g/90ml of each powder were tested and potato peel powder was selected as substrate source for cost-effective growth of β -carotene. The substrate then optimized to obtain maximum growth. Different nitrogenous sources, salts were applied at different pH and temperatures. 10g of potato peel with 0.4g peptone, 0.2g NaCl salt, at 25^oC temperature and pH of 5.4 showed the maximum growth of *Aspergillus* sp. FBN-1 cell mass 16.341g/100ml and highest amount of β -carotene 1.828 \pm 0.03 μ g/g. β -carotene was determined by the correlation of the standard curve obtained from the standard solutions by spectrophotometry technique with the curve obtained from the solutions extracted from the cell mass of strain. β -carotene contents are maximum at the substrate prepared with potato peel powder, and can be administered for optimization with different instruments for further application. According to the findings, among different wastes of agriculture sector, Potato peel could be utilized as a useful substrate for cost-effective β -carotene production. Which provide low cost β -carotene for nutraceutical, food and cosmetic industries.