Title Purification and some properties of alpha-amylase from post-harvest *Pachyrhizus erosus* L. tuber

Author A.S.M. Noman, M.A. Hoque, P.K. Sen and M.R. Karim

Citation Food Chemistry, Volume 99, Issue 3 , 2006, Pages 444-449

Keywords *Pachyrhizus erosus* L. tuber; α-Amylase; Glycoprotein; Characterization

Abstract

α-Amylase, a starch splitting enzyme, was purified to homogeneity from post-harvest *Pachyrhizus erosus* L. tuber by successive chromatography on DEAE- and CM-cellulose columns. Purification achieved was 110 fold from the crude extract with a yield of 22.8%. SDS-PAGE showed a molecular weight of 40 kDa for the enzyme. The enzyme is of α-type as it lost total activity in the presence of EDTA, a chelating agent. It is a glycoprotein that contains 2.6% sugar as estimated by the phenol-sulfuric acid method. The enzyme displayed optimum activity at pH 7.3 and 37 °C with an apparent K_m value of 0.29% for starch as substrate. The enzyme was strongly inhibited by Cu^{2+}, Fe^{2+} and Zn^{2+}, moderately by Li^{2+}, Hg^{+} and Cd^{2+} and slightly by Ag^{+}, Mg^{2+} and K^{+}. Calcium ion almost doubled the activity whereas Fe^{3+}, Mn^{2+} and Na^{+} enhanced it appreciably.