Faculty of Science

Department: Chemistry

Name: Tarek M. Mohamed

Title: Adenosine deaminase from camel tick hyalomma dromedarii: purification characterization

Authors: Tarek M. Mohamed

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Abstract:

Adenosine deaminase is involved in purine metabolism and is a key enzyme for the control of the cellular levels of adenosine. Adenosine deaminase activity showed significant changes during embryogenesis of the camel tick Hyalomma dromedarii. From the elutionprofile of chromatography on DEAE-sepharose, three forms of enzyme (ADAI; DAAII AND ADAIII) were separaed. ADAII was purified to homogeneity after chromatography on Sephacryl S-200 . The molecular mass of adenosine deaminase ADAII was 42 kDa for the native enzyme and represented a monomer of 42 kDa by SDS-PAGE . The enzyme had a pH optimum at 7.5 and temperature optimum at 40 C with heat stability up to 40 C . ADAII had a K_m of 0.5 mM adenosine with higher affinity toward deoxyadenosine and adenosine than other purines. Na^{2+}, Ba^{2+}, Zn^{2+}, Li^{2+}, Hg^{2+} and Mg^{2+} partially inhibited the ADAII . Mg^{2+} was the strongest inhibitor by 91% of the enzyme's activity.

Key words:

Camel, Tick Hyalomma dromedarii, Embryogenesis Adenosine deaminase , Purification, Characteization.

Faculty of Science

Department: Chemistry

Name: T. M. Mohamed

Title: Characterization of esterases from Cucurbita pepo cv. "Eskandrani"

Authors: Afaf S. Fahmy, Amal Z. Abo-Zeid, Tarek M. Mohamed, Hala M. Ghanem, Ibrahim H. Borai & Saleh A. Mohamed

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Abstract:

Two of the six esterases identified in Curcurbita pepo c. "Eskandrani" were puriied to homogeneity using two chromatography steps: anion exchange and gel filtration. The molecular weights of °C. pepo esterases EIc and EII were 50,000 +_ 1500 and 68,000 +_ 1900 Da from gel filtration and 47,000 and 66,000 Da from SDS/PAGE , respectively suggesting a monomeric structure for both enzymes. Esterases EIc and EII had K_m values of 1.22 and 1.56 mM and pH optima at 9.0 and 9.0, respectively . The substrate specificity of °C. pepo esterases EIc and EII were determined for a number of p-nitrophenyl esters, where their affinity toward these substrates were decreased as carbon atom number increased. Esterases EIc and EII had the same temperature optima, 40 °C. Thermal stability studies of esterases EIc and EII indicated that half maximal activities of EIc and EII esterases were reached at 55 °C and 50 °C , while thery lost 45% , 51% and 70%, 77% of their activities after 30 and 90 min of incubation at 40 °C , respectively. The effect of different metal cations and inhibitors were examined. The esterases are closely similar to those of microbial esterases used in food processing and food industry.

Key words:

Esterase, cucurbita pepo cv. "Eskandrani", purification, Characterization.