Digestive α-fucosidase From *Tityus serrulatus*

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Tityus serrulatus females present α-amylase, chitinase, α-fucosidase, β-glucosaminidase as the main digestive carbohydrases. α-fucosidases (EC 3.2.1.51) are glycosyl-hydrolases (GH, family 29), which catalyses the hydrolysis of glycosidic linkages (alpha 1,2, alfa 1,3, alpha 1,4 e alpha 1,6) present in glycoconjugates (carbohydrates, glycoproteins, glycolipids and glycosaminoglycans) between a fucose and other molecules. Few data on these enzymes are available to Arthropoda species. Hepatopancreas from *Tityus serrulatus* females were isolated and homogenized in Milli Q water in a Potter-Elvehjem homogenizer. α-fucosidase activity was measured using 0.05 mM MUαFuc (4-methyl-umbelliferyl-α-L-fucoside) as substrate. Enzyme separation on gel filtration and anion-exchange chromatographies indicated that *Tityus serrulatus* presents two true α-fucosidases. This was shown by the assay of chromatographic fractions using α-glucosidase substrate (MUαGlu) and α-fucosidase substrates (MUαFuc). The activities were found in different fractions indicating two distinct enzymes. These results were confirmed by heat inactivation using MUαGlu and MUαFuc as substrates. α-glucosidase activity was completely inactivated at 65 °C while α-fucosidase remains active. The two α-fucosidase activities were also evidenced on isoeletric focusing, heat inactivation and in cation exchange chromatographies (Resource S column). Major digestive α-fucosidases from *Tityus serrulatus* was isolated by a combination of two cation-exchange chromatographies using a Hitrap S column and a Resource S column in a FPLC system. The major α-fucosidase activity was purified to homogeneity as demonstrated by a 12% polyacrylamide gel electrophoresis. These proteins presents a molecular mass of 86.5 kDa. The pH optimum of a-fucosidase was 5.0, the isoeletric point is 6.0. This α-fucosidase is not inactivated by temperatures of 50°C for 120 minutes.

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