Characterization of a Purified Exopolygalacturonase from *Leucoagaricus gongylophorus* the Symbiotic Fungus of *Atta sexdens*.

Adalberto, P.R. [1]; Golfeto, C.C.; Moreira, A.C.; Cass Q.B. [1]; de Souza, D.H.F. [1]

[1]Dep de Química, UFSCar, SP, Brazil

The symbiotic relationship of Atta sexdens with *Leucoagaricus gongylophorus* represents the major Brazilian agricultural pest. The supply of ants with mushroom hydrolytic enzymes, especially pectinase, is an important issue of mutualistic relation. This dependence suggests a potential target for pest control. In order to clarify this task the present study aims to characterization of a purified polygalacturonase from *L. gongylophorus*. The isolation procedure involved salting out of crude extract followed by two chromatographic steps. Homogeneity obtained by cation exchange chromatography was confirmed by SDS-PAGE. The MS analysis of single gel band digestion revealed the identity of polygalacturonase of *L. gongylophorus*. The molecular exclusion chromatography and the gel electrophoresis migration behavior revealed the monomeric nature of a protein with an estimated molecular weight of about 37 KDa enzyme. The extended hydrolysis of polygalacturonic acid and 75% esterified pectin produced only galacturonic acids monomers, indicating that it PGaseLg is an exopolygalacturonase. The purified enzyme has optimum temperature at 600C and optimum pH activity at 5.0. Using polygalacturonate as substrate the calculate K_M, V_{Max}, and k_{cat} was 0.65 $mg.mL^{-1}$ and 1800 $\mu mol.min^{-1}$ and 35.97 s^{-1} respectively. The enzyme was stable for more than 3 h at 50^oC at pH 5.0; otherwise at lower or higher pH values the PGaseLg is less stable. The influence of several metals, EDTA and β-mercaptoethanol on enzyme activity was also determined.

Keywords: Poligalacturonase, L. gongylophorus, A. sexdens, plague control.
Sponsors: FAPESP and CNPq