

Aspartic Protease Inhibitory Activity of *Pleurotus ostreatus* (Black Oyster) Growing in Sri Lanka

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The literature revealed that the irregular secretion of aspartic proteases is contributed to numerous health problems including hypertension, AIDS, malaria, and Alzheimer's disease. Therefore, the discovery of natural aspartic protease inhibitors provides a novel therapeutic strategy. The aim of the present study is to investigate the pepsin inhibitory activity (PIA) of the mushroom, *Pleurotus ostreatus* (black oyster) and to assess the effect of temperature, pH, metal ions, detergents, oxidizing and reducing agents on PIA. Mushrooms were collected from cultivators who used seeds developed from the mushroom's development and training center in Dehiwala-Mount Lavinia, Sri Lanka. A series of concentrations of aqueous mushroom extract (1.25, 2.5, 5, 10 and 20 %w/v) was screened for PIA using egg albumin as the substrate at 280nm. Then, the effect of different temperatures, pH, metal ions, detergents, and oxidizing and reducing agents on PIA was assessed. The highest PIA (69.11±0.001%) was exhibited by 1.25% concentration and it was used for characterization studies. Among different temperatures and pH conditions, the maximum PIA was exhibited at 60°C (67.65±0.001%) and at pH 2.0 (68.65. ±0.001%) respectively. The presence of Ba²⁺ (34.13±0.01%), Na⁺ (33.21±0.02%), Cu²⁺ (28.42±0.01), Zn²⁺ (28.77±0.01) and Fe³⁺ (21.21±0.01%) ions reduced the PIA activity significantly (p<0.05) compared to the control. Tween-20 (25.78±0.01%), dimethyl sulfoxide (28.14±0.02%), and β-mercaptoethanol (23.07±0.006%) also decreased the PIA significantly (p<0.05) compared to the control. The results of the present study revealed that the black oysters growing in Sri Lanka is a potential source of active aspartic protease inhibitors and the characterization data will be applied in future studies.

Keywords: *Pleurotus ostreatus*, aspartic proteases, pepsin inhibitory activity