



ACTIVITY OF PROTEINACEOUS TRYPSIN INHIBITORS IN SELECTED CEREALS GROWING IN SRI LANKA

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Abstract

Proteinaceous trypsin inhibitors isolated from different natural resources are reported as effective therapeutic agents against cancers, inflammatory diseases, etc. The current study was designed to evaluate the presence of proteinaceous trypsin inhibitors in some selected cereals which were collected from field crop research and development institute, Mahailuppallama, Sri Lanka. A concentration gradient of the seed extract of each selected members of Family Poaceae were quantitatively analyzed for the trypsin inhibitory activity and protein content. The extractions with considerable trypsin inhibitory activity were subjected to ammonium sulphate precipitation and the products were dialyzed in order to partially purify the proteinaceous trypsin inhibitors. Among different varieties of Sorghum, Millets, Rice and Maize, the variety known as MI Sweet Sorghum (MISS) showed the highest trypsin inhibitory activity (40.06 ± 2.07 %) as well as the highest protein content (0.87 ± 0.02 mg/ml). Although two traditional rice varieties called Pachchaperumal (0.96 ± 0.05 mg/ml) and Pokkali (0.93 ± 0.05 mg/ml) showed comparatively higher protein content, they did not exert significant trypsin inhibitory activity. Comparatively the protein content of improved rice varieties was lower than traditional rice varieties and none of them showed trypsin inhibitory effect. Among MISS fractions, proteins precipitated using 30 % of ammonium sulphate possessed the maximum inhibitory activity (14.30 ± 3.14 %) and dialysis of the fraction revealed that the proteinaceous trypsin inhibitors present in MISS are larger than 8 kDa. The results of the present study revealed that the tested cereals do not contain proteinaceous trypsin inhibitors except Sorghum varieties. Further studies are recommended to purify and identify the potential therapeutic trypsin inhibitors from Sorghum seeds.

Keywords: Proteinaceous, trypsin, inhibition, cereals, Sorghum