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Evaluation of Trypsin Inhibitory Activity in Polon mae Seeds; A Local Variety of *Vigna unguiculata* ssp Sesquipedalis

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The trypsin activity is involved in aetiology of certain diseases such as neurodegenerative disorders, cancers and cardiovascular diseases. Therefore, the discovery of natural trypsin inhibitors has been gain attention recently. The present study aimed to screen the trypsin inhibitory activity (TIA) in seeds of Polon mae, a local variety of *Vigna unguiculata* ssp sesquipedalis and to assess the impact of different physio-chemical parameters on TIA. Polon mae seeds were collected from the Field Crops Research and Development Institute of Sri Lanka. A series of concentrations of aqueous seed extract was screened for TIA using casein as the substrate. The concentration which exhibited the maximum activity was pre-incubated in different temperatures and pH values and also in the presence of different metal ions, detergents, oxidizing and reducing agents, prior to evaluate TIA. The maximum TIA was exhibited by the 10% (w/v) extract (97.56±0.01%). The highest TIA was indicated at 37°C (91.24±0.01%) and it exhibited a considerable TIA in higher temperatures (54.95±0.01 at 100^0C) as well. Among different pH conditions, the seed extract exhibited high TIA at 7.0 pH (96.25±0.01%) and pH 7.4 (93.86±0.01%). In the presence of different metal ions (Fe^{3+}, Cu^{2+}, Zn^{2+}, $Ba^{2+,}$ and Na^{+}), Triton X-100 (detergent), dimethyl sulfoxide (oxidizing agent) and dithiothreitol (reducing agent) TIA of the seed extract reduced significantly ($p<0.05$). The present study suggests that, Polon mae seeds contain highly active trypsin inhibitors which are thermostable and the information on the impact of different physio-chemical parameters on TIA will be useful in future studies.

Keywords: *Vigna unguiculata, proteases, trypsin inhibitors*