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**Effect of temperature and pH on the trypsin inhibitory activity of whole seed extracts of *Vigna mungo* (black gram) cultivated in Sri Lanka**

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**Background:** Protease inhibitors from natural sources have been recognized as potential therapeutic agents against diseases caused by the action of proteases. Seeds of the members of family Leguminaceae are rich in protease inhibitors.

**Objective:** To assess the effect of temperature and pH on the Trypsin Inhibitory Activity (TIA) of whole seed extracts of *Vigna mungo* (black gram) which were collected from field crops Research and Development Institute, Mahailuppallama.

**Method:** The crude protein extracts of whole seeds were prepared using distilled water, 15% NaCl, 0.2% NaOH, 0.05 M HCl and 0.1 M phosphate buffer (pH 7.4) according to the methods described in previous studies. The TIA of the extracts was determined using 1% hammerstein casein as the substrate. To determine the optimum pH value for TIA, the test extract was incubated for 4 hours in phosphate buffer ranging from pH 6-7.4. The distilled water extract was incubated at different temperatures ranging from 4-80 °C for 60 minutes.

**Results:** It was observed that distilled water and NaCl extracts of *Vigna mungo* showed the highest TIA (73.2±0.3% and 74.2±1.0% respectively). The phosphate buffer and NaOH extracts showed a TIA of 54.3±0.8% and 59.6±1.0% respectively, while HCl extract did not show any TIA. The maximum TIA, 86.9±0.4% was indicated at pH 6.0. The TIA at 60 °C was 75.6±1.0% while it was 71.3±0.6% at 80 °C.

**Conclusion:** The results of the present study revealed that the most suitable solvent for extraction of trypsin inhibitors from *Vigna mungo* seeds are distilled water and NaCl. The TIA of the test extract is highest at pH 6.0. These protease inhibitors are thermostable even at 80 °C. Further studies are recommended to investigate the therapeutic importance of these protease inhibitors.