A NEW PEPTIDASE INHIBITOR FROM *PLATYPODIUM ELEGANS* SEEDS ACTIVE AGAINST DIGESTIVE ENZYMES OF PEST INSECTS.


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Plant peptidase inhibitors (PI) have a closer relationship to the natural defense system found in plants, especially in seeds. Then, PI characteristics and properties have a large biotechnological potential. In this study, PeTI, a new peptidase inhibitor from *Platypodium elegans* seeds, was isolated and characterized. Briefly, PeTI was purified by ion exchange and affinity chromatographies. The protein profile of the purification steps was performed by SDS-PAGE analysis. The inhibitory activity of PeTI was determined against bovine trypsin and chymotrypsin by measuring hydrolytic activity against BApNA and BTPNA, respectively. Stability studies of PeTI evaluated the inhibitory activity maintenance in a temperature range of 37-100°C after 30 min incubation; in a pH range of 2-10 after 30 min incubation, at 37°C; and in DTT final concentrations of 1, 10 and 100 mM after incubation for 15-120 min, at 37°C. Furthermore, the inhibitory effect of PeTI was *in vitro* evaluated against digestive enzymes from four economically important pest insects, using BApNA as substrate. SDS-PAGE analyses revealed that PeTI had been purified and shows a relative mass of approximately 17 kDa. The inhibitor was active against bovine trypsin and chymotrypsin. In addition, PeTI showed a remarkable stability on a wide range of temperature (up to 90°C) and pH (2-10). In DTT analyses, 50% of PeTI inhibitory activity was lost after 15 min in 10 and 100 mM DTT solutions. PeTI (0.2 µg) demonstrated a strong inhibitory activity against digestive enzymes from *Anagasta kuehniella* (95%), *Corcyra cephalonica* (90%), *Spodoptera frugiperda* (95%) and *Aedes aegypti* (90%). Our results revealed that PeTI exhibits high stability, remaining with its inhibitory activity in different conditions. Furthermore, it was able to inhibit digestive enzymes from economically important pest insects. Thus, PeTI is a protein with promising biotechnological potential for pest control.

**Key Words:** peptidase inhibitors, plant defense, pest insects.

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