PARTIAL ANALYSIS OF THE BIOINSECTICIDE ACTIVITY OF METHYL JASMONATE-INDUCIBLE SERINE PROTEINASE INHIBITORS FROM PASSION FRUIT AGAINST *DIATRAEA SACCHARALIS*

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Plants synthesize a variety of molecules, including proteinase inhibitors to defend themselves when attacked by insects. In order to study defensive proteins induced by methyl jasmonate (MeJa) in passion fruit, it was analyzed the inhibitory activity of crude leaf extracts against trypsin activity. In vitro assay showed a 5-fold induction of inhibitory activity in crude leaf extracts when passion fruit plants were exposed to MeJa. A partial purification procedure with a combination of ammonium sulfate precipitation and gel filtration chromatography yielded a protein enriched fraction with proteinase inhibitors (named PEFPI), containing major proteins raging ~20-25 kDa, as evaluated by SDS-PAGE. Four isoinhibitors were identified using the gel-x-ray film contact print technique. The effect of PEFPI on the proteolytic activity of midguts extracts of larval *D. saccharalis* was studied. Trypsin-like activity from midguts protein extracts were substantially inhibited by PEFPI. We are currently purifying each inhibitor using reverse-phase-HPLC to test each one against digestive enzymes from *D. sacacharalis*. Our results so far indicate the separation of two isoinhibitors. We are working on to adjust the chromatographic conditions to achieve the purification of the remaining inhibitors to complete our analysis regarding their bioinsecticide potential.

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