

Purification and Partial Characterization of 7 Methyl-Jasmonate Inducible Trypsin Inhibitors from Passion Fruit Leaves

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Plant protease inhibitors are diverse in number and in specificity toward various proteolytic enzymes. Such features turned them one of the most important classes of antiherbivore defense proteins in plants. Among signaling molecules, the plant hormone jasmonic acid (and related compounds) plays a very important function in triggering defense responses. In a previous work we demonstrated the induction of Kunitz-type inhibitors in passion fruit leaves in response to methyl jasmonate (MeJa) (Botelho-Júnior et al., 2008). A purification procedure based on RP-HPLC showed the induction of at least 7 trypsin inhibitors in a molecular range of 20-25 kDa. Initial characterization of 4 purified inhibitors by mass spectrometry, suggested that 3 of them are iso-inhibitors since they displayed a common tryptic fragment of 2106 Da. This fragment will be sequenced by MS/MS in order to confirm this hypothesis. In many plant species, the constitutive expression of defensive proteins in flower has been reported. Therefore, we analyzed trypsin inhibitory activity in flower organs of passion fruit. Our results, showed highest inhibitory activity in sepal and petal tissue when compared with stigma, ovary and stamen. In order to discover more defensive proteins induced by MeJa in leaf tissue, a proteome study is on the way. Preliminary results indicate reduction levels of RUBISCO and accumulation of several proteins. Supported: CAPES, FAPERJ, CNPq and UENF.