

Polyamine-bound trypsin inhibitors in sweet potato (*Ipomoea batatas* [L.] Lam cv. Tainong 57) storage roots, sprouted roots and sprouts

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Abstract

Trypsin inhibitors (TIs) were purified from storage roots, sprouted roots and sprouts of sweet potato variety Tainong 57 (T57) by ammonium sulfate precipitation and Sephadex G-75 chromatography. Active fractions were further purified by affinity chromatography on trypsin-Sepharose 4B. Activity staining of TIs on a 15% SDS-PAGE gel revealed TI bands (73, 38 and 22 kDa) in storage roots, sprouted roots and sprouts. TIs, purified by the affinity column, were hydrolyzed by mixing with an equal volume of 12 N HCl at 110°C for 16 h. The hydrolysates were benzoylated with benzoyl chloride in alkaline condition, and the polyamines (PAs) were identified by HPLC using 64% methanol as an eluent. Cad, Spd and Spm were found in all TI hydrolysates with different amounts in storage roots, sprouted roots and sprouts. TIs purified from the sprouts had higher PA titers, which were expressed as nmol/μg protein, than those from sprouted roots or storage roots. The possible physiological roles of PA-bound TIs are discussed.