Developing Cowpea (*Vigna unguiculata*) Seed Coats: 
**PCD Events and Caspase-like Activities**

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PCD is a controlled cellular suicide, essential for normal growth and development of eukaryotes. In plants, it is an event that controls defense and stress responses, cell elimination during development, etc. The goal of this research is to diagnose PCD events in developing cowpea seed coats. Quiescent seeds were cultivated and developing pods were collected at 12, 14, 16, 18, 20, 22 and 24 days after pollination (DAP). Whole seeds were fixed and tested for cellular viability staining (BE/LA), included in histoiresin for TUNEL assay and Epon for TEM. Seed coats were lyophilized and ground to a fine powder before protein extraction and quantification (Bradford). Caspase-like activities were measured using Ac-DEVD-pNa, Ac-VEID-pNA and Ac-IETD-pNA (caspases 3/7, 6 and 8, respectively) substrates, at pHs 5.6 and 7.4. Inhibition assays were performed using Ac-DEVD-al, Ac-VEID-al, and Ac-IETD-al inhibitors. Band profiles were visualized by SDS-PAGE and zymographies. DNA extraction was performed for laddering visualization. Caspase-like proteolytic activities were found for all tested substrates. By SDS-PAGE, no protein bands were observed. In zymograms, an 116kDa band was visualized at both pHs, from 10DAP on and its activity increased until 20DAP, reappearing at the quiescent stage. At pH 5.6, a 55kDa band was present at 20 and 22DAP. DNA laddering was not observed in the samples from 12 to 22DAP. Samples of 24DAP and at the quiescent stage are still under investigation in relation to this phenomenon. These data suggest the presence of different classes of caspase-like enzymes in cowpea seed coats.

**Word Keys:** Programmed cell death, *Vigna unguiculata*, seed coat, caspase-like enzymes.

Supported by: FAPERJ, CNPq and CAPES.
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