

Phytotoxic Effects of Fumonisin B₁ on Cowpea Seed

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The cultivation of cowpea (*Vigna unguiculata*) plays a vital role in the livelihood of many subsistence farmers and rural communities in tropical and subtropical countries. The seeds are prone to fungal infestation and mycotoxin contamination during sub-optimal storage conditions. Fumonisin B₁ (FB₁), produced by *Fusarium proliferatum*, has been detected in cowpea seeds. Surface-disinfected seeds were imbibed in sterile distilled water amended with FB₁ at various concentrations. Percentage germination was determined according to the International Seed Testing Association rules. All the toxin concentrations significantly decreased seed germination and the two highest concentrations – 50 and 100 µg ml⁻¹ FB₁ – inhibited root and shoot elongation. FB₁-treated embryonic tissues evinced compaction of the protoplasm and separation of the plasmalemma from the cell wall. Lipid bodies accumulated, which seemed to be lining the cell wall. This is the first study to demonstrate the phytotoxic effects of FB₁ on cowpea seeds.

KEY WORDS: Cowpea; *Vigna unguiculata*; fumonisin B₁; *Fusarium* spp.; germination; ultrastructure.

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