The sulfated, but not the native galactomannan from *Adenanthera pavonina* seeds induces defense related proteins in cowpea [*Vigna unguiculata* (L.) Walp.]

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INTRODUCTION: The structure of poly- and oligosaccharides employed as elicitors of plant defense against pathogens is important for their biological activities. It is well established that the sulfate groups of some oligosaccharides play a key role in major physiological processes in plants and animals. Various analyses proved that the sulfate groups of some oligosaccharins mediate recognition in biochemical and physiological processes of algae, land plants, and animals. Therefore the development of strategies for structural modification of oligosaccharides appears as a good alternative for the search of new oligosaccharide elicitors. **OBJECTIVES:** To determine whether sulfation of a native galactomannan isolated from *Adenanthera pavonina* seeds alter its biological activities towards eliciting plant defense responses in cowpea against *Colletotrichum gloeosporioides*, thereby opening new options for crop protection. **MATERIAL AND METHODS:** Cowpea plants were sprayed with the native and sulfated galactomannan at 100 and 200 mg/L in 0.01% Triton X-100. Control plants were similarly sprayed, but only with 0.01% Triton X-100. Six hours after the sulfated carbohydrate treatments, the primary leaves were inoculated with *C. gloeosporioides*, collected 0, 6, 12, 24 and 48 h after the carbohydrate or control treatments, and immediately stored at -85 °C until analyses. **RESULTS AND DISCUSSION:** The sulfated galactomannan increased the activity of different families of Pathogenesis-Related (PR) proteins and enzymes related to oxidative stress, but not the native galactomannan. Macroscopic analysis revealed that the leaves treated with 200 mg/L of sulfated galactomannan and infected with *C. gloeosporioides* showed reduced necrotic lesions compared to control. **CONCLUSION:** The results indicate that sulfation of a native galactomannan isolated from *A. pavonina* alters its biological activity towards an inducer of defense responses of a susceptible cowpea genotype (BR3) against *C. gloeosporioides,* by altering the activities of defense related proteins, and that the presence of sulfate groups is highly relevant to its biological activity.

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