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Response of Soy Cultures to Biological Elicitors of Fungal and Algal Origin

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Soybean products are known for their high protein content and their production of isoflavones (natural products) many of which have an estrogenic activity. Interestingly, soy plants also display a natural resistance to *Aspergillus flavus* and *A. parasiticus*, the fungi which make aflatoxins, the highly mutagenic and carcinogenic secondary metabolites. Since the aflatoxigenic fungi routinely infect crops of human and animal consumption but the soybean plant is able to avoid fungal infection, it is possible that the soybean cells release stress-response compounds such as isoflavones, which offer a protective role against fungal infection. To explore this hypothesis, we compared HPLC profiles of soy extracts from cell suspension cultures of soybean - one group exposed to selected fungal elicitors and the other, unexposed control. To accomplish this, a stable callus cultures of *Glycine max* var. Asgrow 5902 were established from immature cotyledons on MS basal medium supplemented with an auxin (20 ug/ml) and a cytokinin (5 ug/ml). Using three elicitors [fungal cell-wall extract (from *A. flavus*, provided by SRRC), nigerin and laminarin (both from Sigma)], cells suspension cultures (ca. 2 g) were exposed to fungal elicitors of various doses for 14, 24, 48 and 72 hours. After incubation, both the control and the elicitor-exposed cells were lyophilized and the samples were then analyzed by HPLC-MS. Several constitutive isoflavones have been identified in soybean cells that were exposed to fungal elicitors and preliminary data indicate production of novel phytoalexins related to the glyceollins.

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