

Black Pod Peanut Shell Extracts Reduce In vitro *Aspergillus parasiticus* Growth

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Peanut (*Arachis hypogaea* L.) is one of the food crops affected by aflatoxin, a mycotoxin produced by *Aspergillus* spp. Aflatoxins are one of the most potent naturally occurring carcinogens known. Attempts to identify an *Aspergillus* or aflatoxin resistant peanut have been unsuccessful partly due to the large environmental effect on toxin development. However, the benefits of a resistant or tolerant peanut cultivar would be enormous for farmers, the peanut processing industry, and consumers. Thus, there is a need to continue searching for a cultivar that could reduce *Aspergillus* growth or aflatoxin contamination. University of Florida breeding research results with landrace "Vaina Negro" (Black pod in English) has led to the hypothesis that it could be tolerant to aflatoxin based on the chemical composition of its shell as compared to the shell of commercial peanut genotypes. Black pod shell methanol extracts had significantly higher concentrations of total polyphenols and total antioxidants when compared to a commercial cultivar. These extracts were added to Czapek's agar and the media was inoculated with *Aspergillus parasiticus*. Plates were scanned every two days for 10 days with an Epson flatbed scanner starting two days after inoculation. Scans were analyzed using the WinCam® pixel color classification software. Media containing landrace extracts reduced growth and growth rate by 15% when compared to the media with no peanut shell extracts by 12% when compared to the commercial cultivar ($p < .0001$). Additionally, inoculated media based on coconut milk and evaluated with a fluorometer showed that extracts of the landrace had 21% and 22% less fluorescence attributed to aflatoxin 130 hours after inoculation when compared to the commercial cultivar and inoculated media without extracts, respectively. Fluorescence is commonly used to estimate aflatoxin concentrations from ground peanut seeds. These results show that the compounds present in the landrace influence *Aspergillus* growth and possibly aflatoxin contamination. A reduced growth of the fungus could result in a reduced risk for infection that leads to reduction of aflatoxin levels thus providing a level of tolerance to these peanuts.