Title Postharvest control of peanut *Aspergillus* section *Flavi* populations by a formulation of food-grade antioxidants

Author María A. Passone, Mariana Ruffino, Verónica Ponzio, Silvia Resnik and Miriam G. Etcheverry

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Abstract

The effect of a formulation containing butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT) and propyl paraben (PP) on total mycoflora and *Aspergillus* section *Flavi* populations in natural and inoculated stored peanuts was evaluated. A survey of 480 peanut samples was carried out from July to December 2006. Two experimental units (silos 1 and 2) contained 200 kg of natural peanuts, while the other two (silos 3 and 4) had 200 kg of peanuts inoculated with *Aspergillus flavus*/*A. parasiticus* mixture (2×10^4 spores g^{-1}). Silos 2 and 4 were treated with BHA-PP-BHT mixture (1802 + 1802 + 2204 μg g^{-1}). Fungal counts were significantly affected ($P < 0.001$) by *Aspergillus* section *Flavi* inoculum, tissue type, sampling period, antioxidant treatment and their interactions. *Penicillium*, *Aspergillus* and *Fusarium* spp. were the most common genera identified from both peanut tissues. *Aspergillus flavus* was the most frequently isolated species and there were significant differences ($P < 0.05$) between its population in the control and treated peanuts. No aflatoxins were detected in any of the control or treated samples during storage. The development of natural peanut mycoflora and particularly *Aspergillus* section *Flavi* populations was inhibited by the ternary mixture of food-grade antioxidants.