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(POS-10) Effect of High Voltage Atmospheric Cold Plasma on Aspergillus flavus Inactivation and Aflatoxin B1 reduction on Inoculated Raw Peanuts

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Peanuts are highly susceptible to contamination with *Aspergillus* spp. mold in the field or during storage, which may lead to moldy peanuts or generation of aflatoxin, both of which are food safety issues. *A. flavus* is the main mold that produces aflatoxin B1 (AFB1). High voltage atmospheric cold plasma (HVACP) is an emerging non-thermal technology with short treatment time, low energy consumption, that leaves no chemical residue on the food. In this study, peanut samples were inoculated with *A. flavus* spores and AFB1 toxin. Subsequently, samples were treated with HVACP at 90 kV and a power of 160 W for several treatment times (2, 5, and 10 min), relative humidities (RH, 5, 40, and 80%), and post-treatment storage times (0, 4, and 24 h) with a direct exposure mode using air (78% N₂:22% O₂) as the working gas. A reduction of 2.20 log cfu/sample of *A. flavus* spores was observed for the peanut treated for 5 min. More than 99.9% (3.0 log cfu/sample) of *A. flavus* was obtained with a HVACP treatment for 10 min at an 80% RH and post-treatment time of 24 h. A 67.8% AFB1 reduction was achieved in pure toxin with a treatment for 2 min with 5% RH air and no post-treatment. AFB1 toxin on peanuts was reduced by 71.3% and 84.5% by 2 and 10 min, respectively, for HVACP direct treatment in air with 80% RH at 90 kV. The reduction of AFB1 toxin increased in function of RH, with no differences in the color, texture and peroxide value of treated and control peanuts. Results indicate that HVACP is a promising technology to effectively inactivate *A. flavus* and reduce AFB1 on raw peanut kernels without adversely affected peanut quality.

Keyword-1

Cold plasma

Keyword-2

Food safety

Keyword-3

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