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The Impact of Ozone on the Sensory Perception of Pumpkin Seeds and its Toxicity against Plodia interpunctella (Lepidoptera: Pyralidae)

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Abstract : The utilization of ozone treatment as a potential technique for storage pest control has gained significant attention. This approach presents an alternative to traditional chemical methods. In the current study, the mortality rates of Plodia interpunctella as a primary pest found in stored products particularly nuts, were examined after being exposed to different O3 concentration (minimum, half, and maximum) in three replicates and within 24 hours. As the concentration of O3 increased, the mortality rates of P. interpunctella also experienced a dramatic growth. A 20-member panel (men and women in different ages), formed from the society community, was selected for sensory evaluation. The pumpkin seeds samples were coded and presented randomly in identical containers. The panelists were asked to evaluate their degree of liking or disliking on a seven-point hedonic scale using descriptive categories, ranging 1-7 (1: extremely dislike, 2: very dislike, 3: dislike, 4: no difference, 5: like, 6: very like, and 7: extremely like). The results obtained from experiments on the qualitative characteristics of the studied dates through the sensory test revealed that O3 concentration did not affect their color, crispness, firmness, and overall acceptance and the half concentration of ozone on pumpkin seed had the highest consumption interest. Moreover, minimal alterations were observed in the aroma of the pumpkin seeds, which could be resolved with a short period of air exposure. Therefore, it could be concluded that the atmospheric O3 gas provided a cost-effective and environmentally friendly way for controlling the insect pests in pumpkin seeds, besides preserving their sensory and quality properties.

Keywords : zone, control, pumpkin seeds, qualitative characteristics
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