ACTIVE PROPERTIES OF EDIBLE FILMS BASED ON *Allium* PUREES FOR POTENTIAL MEAT PRODUCTS PRESERVATION

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Abstract: The use of vegetables in the production of active edible films is an interesting approach due to the presence of bioactive compounds in their composition. In this study, white and red onion (*Allium cepa L.*) as well as garlic (*Allium sativum L.*) with skin were used to develop edible films, and their antioxidant and antimicrobial properties were investigated for potential application in meat products. Films were produced by the casting method using purees from previously hydrothermally pretreated bulbs. The hydrothermal pre-treatment was carried out in an autoclave (1,2 kgf/cm^2 by 30 min). The antioxidant activity of the films was evaluated by 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonate) (ABTS·+) radical method from methanolic extracts from each formulation. The antimicrobial activity *(in vitro*) was assessed using the disk diffusion method, using strains of *Staphylococcus aureus* (ATCC 6538) and *Escherichia coli* (ATCC 11229). Films with a diameter of 15 mm were used, an alginate film and a streptomycin solution as negative and positive controls respectively. Following inoculation, the plates were kept in refrigeration (4 ± 1°C) for 24 h before incubation period (24 h at 35-37°C). Then, the inhibition zone was measured using a caliper. Cohesive and homogeneous films were successfully produced after hydrothermal pretreatment. White onion and red onion films exhibited higher antioxidant activity (~9 μmol TE/g dw) than garlic film (~5 μmol TE/g dw). The films did not show an inhibition zone against the studied bacteria. This may be due to an insufficient concentration of active compounds in the film matrix or even the low diffusivity of these compounds in the culture medium. These materials (especially onion-based films) have the potential for application as wraps to meat products, acting as a primary packaging with sensory and active (antioxidant) properties.

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