

## Preparation and Characterization of Maltodextrin Microcapsules Containing Walnut Green Husk Extract

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**Abstract :** In recent years, the field of natural antimicrobial and antioxidant compounds is one of the main research topics in the food industry. Application of agricultural residues is mainly cheap, and available resources are receiving increased attention. Walnut green husk is one of the agricultural residues that is considered as natural compounds with biological properties because of phenolic compounds. In this study, maltodextrin 10% was used for microencapsulation of walnut green husk extract. At first, the extract was examined to consider extraction yield, total phenolic compounds, and antioxidant activation. The results showed the extraction yield of 81.43%, total phenolic compounds of 3997 [mg GAE/100 g], antioxidant activity [DPPH] of 84.85% for walnut green husk extract. Antioxidant activity is about 75%-81% and by DPPH. At the next stage, microencapsulation was done by spray-drying method. The microencapsulation efficiency was 72%-79%. The results of SEM tests confirmed this microencapsulation process. In addition, microencapsulated and free extract was more effective on gram-positive bacteria rather than the gram-negative ones. According to the study, walnut green husk can be used as a cheap antioxidant and antimicrobial compounds due to sufficient value of phenolic compounds.

**Keywords :** biopolymer, microencapsulation, spray-drying, walnut green husk

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