Karakterizacija biološko razgradljivih polimernih filmov zelene soje

Characteristics of edible biodegradable Mung bean films

Marija Radojković[1], T. Bourtoom[2], D. Tomanek[1], Z. Stojanović[1], S. Vidović[1], Z. Zeković[1]

[1] Univesity of Novi Sad, Faculty of Tehnology, Bul. Cara Lazara 1, Novi Sad, Serbia; ramarija@uns.ns.ac.yu

[2] Princ of Songkla University, Faculty of Agro-Industry, Hat Yai, Thailand

Edible biodegradable polymer films represent another example of technological innovations, which aims to satisfy criteria of healthy nutrition and human medicine with obtaining of pharmaceutical and edible products characteristics. The components used in the production of biodegradable polymer films can be classified into three categories: hydrocolloids, lipids and composites. *Mung bean* is used as an alternative substance in biodegradable film production due to high protein content.

In this work, the effects of different plasticizer types (sorbitol, polyethilenglycol and glycerol) were tested on the protein films characteristics made of *Mung bean*. The influence of different concentrations (40%, 50% and 60%) of three plasticizers on protein films was determined. Explored characteristics were tensile strength and water vapour permeability. The characteristics were represented as average values and the experimental results uncertainties.

The obtained values for the tensile strength were in the range from $13.799*10^3$ to $63.426*10^3$ Pa and reproducibility of the results were very good (in the range 11.0-25.4%, expressed as a coefficient of variation Kv). The highest value of tensile strength achieved for film with 60% of sorbitol as plasticizer, and it snowed the best reproducibility of the tensile strength (Kv = 11.0%). The water vapour permeability was in the range from 0.505 to 1.171 g mm/m2 day kPa, with reproducibility from 5.56% to 33.21%. For concentration of 50% of both plasticizers, reproducibility was lower. Considering the water vapour permeability and its reproducibility, films with polyethilenglycol as plasticizers showed the best properties (C = 60%, Kv = 5.65%).

The results and statistic indicators enable use of examined protein films made from *Mung bean* in pharmaceutical and edible products, in accordance to needed characteristics of final product with most efficient attributes.