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ENCAPSULATION OF ANTHOCYANINS FROM BLUE MAIZE IN ORDER TO CREATE FUNCTIONAL CARRIERS WITH APPLICATION IN THE FOOD AND PHARMACEUTICAL INDUSTRY

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Colored grains are rich sources of anthocyanins that could play an important role in the prevention of various diseases associated with oxidative stress. The food and pharmaceutical industry are aiming to exploit the novel sources of valuable bioactove compounds and their increased utilization is one of a researches goal. Anthocyanins-rich colored grains could be used as a functional food ingredient that provides health benefit to a large part of human world's population.

The aim of the present research was to develop and examine microencapsulation systems of blue maize flour using conventional wall material (biopolymers) as maltodextrin (MD), in combination with novel one, hydroxypropyl-β-cyclodextrin (HPCD), in order to obtain powder with appropriate functional, organoleptic and pharmacological characteristics, uniform in size, which could be applied in the food and pharmaceutical industry. Waste product of blue maize processing was used for anthocyanins extraction. Liquid blue maize extract was spray dried with and without adding carrier agents: MD (30%), HPCD (30 %) and combination of both carriers (15% MD and 15% HPCD). The obtained samples were analyzed for the powder property parameters (powder yield, moisture content, rehydration time, powder densities, flowability, cohesiveness, pH and color) and for the content of phenolic compounds.

Powder bulk and tapped densities are important parameters which determine the quality of final product in pharmaceutical process. Bulk density values were in the range from 0.23 to 0.33 g/ml and tapped densities from 0.37 to 0.55 g/ml, demonstrating good powder properties. Rehydration properties of blue maize microencapsulated powders was in accordance with results of their flowability and cohesiveness. Powder obtained with MD was characterized with significantly longer rehydration time athough in combination with HPCD rehydration time was half time shortened. The average content of anthocyanins and total phelolic compounds in microincapsulates was high, 10.677 µg CGE/g and 31.380 µg CE/g, respectively.

Keywords: *Blue maize, anthocyanins, encapsulation, spray drying, functional carrier*