

MICROENCAPSULATION OF ANTHOCYANINS FROM PURPLE SWEET POTATO (IPOMOEA BATATAS L.) WITH STARCH AND MALTODEXTRIN

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In this study, the microencapsulation of anthocyanins extracted from purple sweet potato using starch and maltodextrin as encapsulating agents was evaluated. The quality of the microencapsulated powder was established through the analysis of solubility, hygroscopicity, moisture, color, anthocyanin content, hygroscopicity, and water activity. Additionally, the kinetic and thermodynamic parameters were evaluated for each powder. Six formulations with different proportions of maltodextrin and starch (100M:0S, 80M:20S, 60M:40S, 40M:60S, 20M:80S, and 0M:100S) were designed, and microencapsulation was carried out using spray drying. The results revealed that the powder with the highest concentration of anthocyanins was obtained using only starch as the encapsulating agent (99.11 ± 0.99 mg/100g), followed by the 20M:80S formulation (85.75 ± 0.10 mg/100g). All powders exhibited outstanding properties in terms of rehydration and color, positioning them as suitable candidates for use as high-quality red colorants. Additionally, it was observed that powders with starch as the sole encapsulating agent and the 20M:80S formulation showed lower activation energy, suggesting greater stability against thermal degradation. Finally, the thermodynamic parameters obtained indicated that the degradation of anthocyanins follows a first-order kinetic model, being an endothermic and irreversible process. The parameters evaluated in this investigation are crucial to estimate the shelf life of a product and exploring its potential applications in the food industry, among others.

Keywords: Purple sweet potato, anthocyanins, degradation

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