

Characterization of Xanthone in OSA-Black Glutinous Rice Flour Microcapsules by FTIR and XRD Methods

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ABSTRACT

Octenyl succinic anhydride is often used to modify starch for encapsulation purposes. Xanthone and its derivatives exhibit a wide range of biological and pharmacological activities, including antimicrobial, antioxidant, and antitumor. This study investigated the effect of starch modification by octenyl succinic anhydride on xanthone encapsulation efficiency. The starch sample was added with 0.4% xanthone as core material. We analyzed the encapsulation efficiency and important characteristics of microcapsules, such as xanthone content, crystallinity of amylose, and chemical structure. Black glutinous rice flour modified by octenyl succinic anhydride showed higher encapsulation efficiency than the native black glutinous rice flour. Starch-xanthone complexation resulted in an A-type starch as identified by XRD. The FTIR pattern showed shifts in the absorbance peaks at 3,000-3,700 cm⁻¹, which indicated that xanthone was adequately complexed in the flour structure.

Keywords: OSA-modified rice flour, Black glutinous rice, Xanthone encapsulation, FTIR, XRD