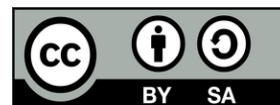




Research article



EFFECTS OF INLET TEMPERATURE AND WALL MATERIAL ON ENCAPSULATION YIELD, MORPHOLOGY AND CHEMICAL PROPERTIES OF SPRAY-DRIED *C. TERNATEA* FLOWER

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ABSTRACT

C. ternatea, commonly known as blue pea flower, is a rich source of natural anthocyanins and other bioactive compounds with potential applications as natural colourants in food products. However, anthocyanins are sensitive to environmental and processing conditions, necessitating suitable protection during processing. This study investigated the effects of inlet temperature and wall material composition on the encapsulation yield, total anthocyanin content, morphology, and chemical profile of *C. ternatea* extract encapsulated by spray drying. Maltodextrin, arabic gum, and a combination of both wall materials were evaluated at inlet temperatures of 160, 180, and 200 °C. Total anthocyanin content was quantified using the pH differential method, particle morphology was examined using Field Emission Scanning Electron Microscopy (FESEM), and selected volatile and semi-volatile compounds were qualitatively identified using Gas Chromatography-Mass Spectrometry (GC-MS). The highest encapsulation yield (46.07%) and total anthocyanin content (27.47 mg/100 g encapsulated powder) were obtained using 10% maltodextrin at 160 °C. FESEM observations showed that wall material composition influenced particle morphology, while GC-MS analysis demonstrated differences in the chemical profiles among the formulations. Overall, the findings indicate that inlet temperature and wall material composition influence powder recovery, anthocyanin content, particle morphology, and chemical composition of spray-dried *C. ternatea* powder. Among the investigated conditions, 10% maltodextrin at 160 °C provided the most favourable combination of encapsulation yield and anthocyanin content