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Microencapsulation of black seed oil in alginate beads for stability and taste masking (Article)

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Abstract

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Black seed oil (BSO) has several therapeutic benefits, mostly owing to its active ingredient thymoquinone (TQ). BSO's unpleasant taste and unavailability of dosage form suitable for children nictitate the need for a new formulation. This study aimed to encapsulate BSO in alginate beads for TQ stabilisation and taste masking. Microencapsulation was performed using an electrospray technique where the flow rate and high voltage were studied using 3^2 full factorial design. The response variables were the size and shape of the beads and the encapsulation efficiency. TQ stability was

studied using HPLC, while taste masking was evaluated in healthy human volunteers. Also, BSO was completely encapsulated in spherical beads. It was found that the high voltage and flow rate had significant effects on beads size. Furthermore, TQ in BSO-alginate beads was more stable than TQ in an aqueous solution and the original BSO. The palatability study showed significant improvement in BSO palatability following encapsulation. Therefore, this study suggests that BSO palatability can be improved without reducing TQ stability by encapsulation in alginate beads. © 2020 Elsevier B.V.

Author keywords

Alginate beads | Black seed oil | Electrospray | Nigella sativa | Taste masking | Thymoquinone stability

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