

The effect of changing the oil concentration on oil content, encapsulation efficiency and release rate of cinnamon leaf oil encapsulated chitosan microcapsules

A. M. T. Muthumali and P. A. S. R. Wickramarachchi*

Department of Chemistry, Faculty of Science, University of Kelaniya, Sri Lanka

**Email: suranga@kln.ac.lk*

Antibiosis, insect repelling and stress reducing properties of essential oils have been widely studied and well established. However, the release speeds of these compounds are usually high. Encapsulation is one of the effective methods commonly used to control the release and to increase the bioavailability of these compounds. In this research, cinnamon leaf oil was incorporated into chitosan microcapsules (MCs) to achieve the above mentioned goals. Here, we investigated the effect of changing the oil concentration on oil load, oil content, encapsulation efficiency and release rate of MCs. MCs were prepared by decreasing the solubility of chitosan. Briefly, NaOH was dripped into pre-prepared oil-chitosan emulsion, with slow stirring. Glutaraldehyde (10 mmol/g of polymer) was used for further crosslinking of chitosan wall of MCs. The average particle size was determined using the stage micrometer. Oil release was studied by UV-visible spectrophotometry. Oil release, encapsulation efficiency, oil content and oil load in MCs were calculated.

Cinnamon oil (g)	Average particle size (μm)	Oil load (%)	Oil content (%)	Encapsulation efficiency (%)
1.0	22.00 (± 2.45)	12.93 (± 0.41)	28.10 (± 1.77)	69.32 (± 0.73)
2.0	30.00 (± 3.87)	14.13 (± 0.21)	35.11 (± 0.87)	74.65 (± 0.65)
3.0	50.50 (± 6.10)	16.20 (± 0.45)	44.11 (± 1.37)	81.60 (± 0.72)

