# Utilization of alginate as an encapsulation model of coconut shell liquid smoke / Hilda Novianty, Purnama Darmaji, Yudi Pranoto, Suharwadji

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Abstrak

ABSTRACT<br>
Alginate extracted from brown seaweed has gelling properties that make it useful as a wall material in encapsulation systems. Liquid smoke contains the active substances, such as phenols, which can preserve food. In order to protect the active substances, liquid smoke is encapsulated by using alginate and maltodextrin. The purpose of this study was to investigate liquid smoke encapsulation technology with maltodextrin and alginate using a spray dryer, to improve the physical and chemical characteristics of the liquid smoke. The microcapsules of liquid smoke were made, using a spray dryer SD 04, by encapsulating liquid smoke with two types of wall materials, maltodextrin and the combination of alginatemaltodextrin. The ratio of liquid smoke to total solids (wall materials) was 9:1 (v/w). The alginate concentration used was 0.5 to 2% (w/v). Parameters observed in this study were phenol release, shape and morphology, encapsulant efficiency, drying yield, phenol marker and, particle size. This study used a completely randomized design with three replications. The best treatment was obtained by using the alginate with a concentration of 1% (w/v) and maltodextrin of 9% (w/v) with phenol release of 2.52% (w/w) in the 20 minute of release, encapsulant efficiency of 45.13% and drying yield of 28.74%. The particle size analyzer results showed that the particles were agglomerating. Scanning electronic microscope (SEM) observation illustrated that all treatments have a better capsule morphology than the controls, whereas Optilab image processing and analysis software results showed that phenolic compounds are encapsulated by wall materials used.