

**ANTIFUNGAL ACTIVITIES OF ALGINATE
FILMS INCORPORATED WITH LEMON GRASS
(*Cymbopogon citratus*) ESSENTIAL OIL ON SLICED BREAD**

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ABSTRACT

The accumulation of non-degradable and non-recyclable waste materials leads researches to venture on biopolymer films which have been regarded as the promising green substitutes of non-biodegradable plastic materials. However, food products can be subjected to contamination by bacteria and fungi. The addition of plant derived essential oil can control microbial contamination of foods by reducing the growth rate of target microorganisms or by inactivating microorganisms by direct or indirect contact. Incorporating antimicrobial compounds into films provides a different way to improve the safety of ready-to-eat foods. In this study, the efficiency of synthesized alginate films incorporated with lemon grass essential oil (LGEO) for antifungal activity on white bread was evaluated. Two sets of film were prepared the (1) LGEO - Ethanol incorporated films and (2) LGEO – β -cyclodextrin inclusion complex films via solution casting method. Furthermore, the FTIR analysis of the generated films was also assessed to identify the functional groups present in the film that facilitates its antifungal property. Experimental results showed that LGEO enhanced the antifungal properties in the films and significantly slowed down the propagation of fungi on white sliced bread. After two weeks of storage, all bread samples packed with various film samples showed fungal growth. It was found out that citral is the main component of essential oil which contributes to the inhibition of fungal growth. The incorporation of LGEO in the film decreased the O-H peak absorbance while the inclusion complex in the film increases the O-H peak absorbance and broad O-H peaks were also obtained.