

**Title** Microencapsulation of fingerroot oil against food microorganisms in meat products  
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### **Abstract**

**Introduction:** Fingerroot (*Boesenbergia pandurata* Schltr) is a rhizomatous spice which usually used in Thai cooking. Essential oil of fingerroot (EOF) has shown the potential antimicrobial activity against food microorganisms. However, the application in food is limited by its strong odor and flavor. Microencapsulation can overcome these limits, though its antimicrobial activity was curious. The objective of this study was to investigate the antimicrobial activity of microencapsulated fingerroot oil against food microorganisms in microbiological media by using an agar dilution assay and enumerated growth over time in a food system by using chicken breast meat as a model. **Materials and Methods:** Fingerroot oil was encapsulated with  $\beta$ -cyclodextrin at ratio of 25:75, 30:70, 40:60, and 50:50 (w/w) by a precipitation technique. In the microbiological media, microcapsule at ratios 40:60 and 50:50 had same MICs value (0.2-0.4%, v/v) that showed strong antimicrobial against *Listeria monocytogenes*, *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhimurium* and *Salmonella Weltevreden*. In the food system, chicken breast meat was inoculated with 3 logs *L. monocytogenes*. Then 4% microcapsule at ratio 40:60 was added into experimental samples that were packed under vacuum and stored at 4°C for 5 days. Samples were examined for numbers of *L. monocytogenes*, lactic acid bacteria (LAB) and total bacteria (TPC). **Results and Discussion:** Fingerroot oil microencapsulated had slightly less antimicrobial effect than EOF. However, it reduced *L. monocytogenes* and total bacteria by ca. 1 log CFU/g within a day and inhibited their growth for 5 days. Moreover, it extended shelf-life by at least 2 days. Thus, microencapsulation of fingerroot oil in  $\beta$ -cyclodextrin could be applied in meat products for increasing wholesomeness and extending shelf-life.