

ABSTRACT

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CHARACTERIZATION OF EDIBLE FILMS WITH DOUBLE EMULSIONS FROM CINNAMON (*Cinnamomum burmannii*) OIL AS ANTIMICROBIAL

Thesis, Faculty of Science and Technology (2019).

(xv + 77 pages: 18 figures, 8 tables, and 12 appendices)

There have been various researches regarding starch-based edible film as carriers of active substances such as antimicrobial substances, with one of them being essential oils. In this research, cinnamon essential oil obtained through distillation method was used as antimicrobial agent in edible film, as there have been many researches proving cinnamon essential oil compounds' antimicrobial activity towards various pathogenic microorganisms. The incorporation of cinnamon essential oil in the form of double emulsion will increase its compatibility in edible film. This research's aim was to characterize the properties of edible films made with different cinnamon essential oil concentrations (4% and 6% oil) and different double emulsion concentrations (2%, 4% and 8% double emulsions). The edible films were made with incorporation of double emulsions with different concentrations of cinnamon essential oil. In general, higher cinnamon essential oil concentration significantly ($p \leq 0.05$) increased opacity, elongation at break and antimicrobial activity of edible films, however, vice versa leading to significantly ($p \leq 0.05$) decreasing tensile strength, water vapor transmission rate and swelling capacity. Addition of double emulsion also affected edible film characteristics, in such a way that higher double emulsion concentration significantly ($p \leq 0.05$) increased opacity, thickness, tensile strength, water vapor transmission rate and swelling index of the film, however, would significantly ($p \leq 0.05$) reduce the elongation at break value.

Keywords: Antimicrobial, cinnamon oil, double emulsion, edible film, essential oil

References: 106 (1991-2018)