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Starch-based antimicrobial films incorporated with lauric acid and chitosan

Salleh, E.[1]* and Muhamad, I.I.[1]

Antimicrobial (AM) packaging is one of the most promising active packaging systems. Starch-based film is considered an economical material for antimicrobial packaging. This study aimed at the development of food packaging based on wheat starch incorporated with lauric acid and chitosan as antimicrobial agents. The purpose is to restrain or inhibit the growth of spoilage and/or pathogenic microorganisms that are contaminating foods. The antimicrobial effect was tested on *B. substilis* and *E. coli*. Inhibition of bacterial growth was examined using two methods, i.e. zone of inhibition test on solid media and liquid culture test (optical density measurements). The control and AM films (incorporated with chitosan and lauric acid) were produced by casting method. From the observations, only AM films exhibited inhibitory zones. Interestingly, a wide clear zone on solid media was observed for *B. substilis* growth inhibition whereas inhibition for *E. coli* was only revealed underneath the film discs. From the liquid culture test, the AM films clearly demonstrated a more effective inhibition against *B. substilis* than *E. coli*.

Keywords: Antimicrobial film, active packaging, lauric acid, chitosan, *B. substilis*, *E. coli*.

[1]*Department of Bioprocess Engineering, Faculty of Chemical Engineering and Natural ResourcesEngineering, Universiti Teknologi Malaysia, 81310 Johor, Malaysia.*
*Corresponding author: eraricar@fkkksa.utm.my