ABSTRACT

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Optimization of Antibacterial Activity From Fresh Seaweed Gracilaria coronopifolia Extract Against pH and Temperature

(xiv + 91 pages : 8 tables, 21 pictures, 16 appendixes)

Food spoilage usually happened because of bacterial action. To prevented spoilage, preservatives that usually used was synthetic food additives, besides there is a lot of natural preservatives such as seaweed. Gracilaria coronopifolia is one type of seaweed which is widely available in Indonesia. That seaweed usually used to make agar but actually, it is potential as a source of antimicrobial. In this research, Gracilaria coronopifolia processed into antibacterial extract with type of solvent and concentration of extract as a factors. This extract was evaluated for yield, zone of inhibition, MIC and MBC, and phenolic content. Greatest yield was came from extract which was made from solvent ethanol : ethyl acetate = 60:40. Greatest zone of inhibition came from extract which was made from ethyl acetate 100%. Best concentration for Bacillus cereus is 20%. MIC for this bacteria is 0.49% and MBC is 1.99%. Best concentration for Escherichia coli is 20%. MIC for this bacteria is 0.56% and MBC is 2.34%. Best concentration for Staphylococcus aureus is 25%. MIC for this bacteria is 0.39% and MBC is 1.59%. Optimization for antibacterial extract was made with RSM (Respond Surface Methodology) method with pH and heating temperature as a factors. Optimum pH and heating temperature for Escherichia coli is 6.78 and 40°C. For Bacillus cereus, optimum pH is 7 and optimum heating temperature is 25.86°C.

Keywords : Antibacterial, Seaweed, Gracilaria coronopifolia, Extraction, RSM, Optimization

References : 40 (1991-2010)