

## Uji mikrobiologi dan fisiokimia minyak cengkeh sebagai pengawet terhadap buah pepaya (*Papaya carica L.*) = Microbiological and physicochemical tests of clove oil as preservation for papaya fruit (*Papaya carica L.*)

Chrisphine Deksi Wisakanti, author

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### Abstrak

Cengkeh merupakan salah satu herbal yang dapat menghasilkan minyak esensial yang berperan dalam fungsi insektisida, antioksidan, antifungi dan antibakteri. Pengaruh bioaktif minyak esensial cengkeh dalam teknologi kemasan pada karakteristik mikrobiologi dan fisiokimia buah pepaya yang disimpan pada suhu 25oC dan kelembaban relatif 85-90% diinvestigasi. Minyak esensial cengkeh didapat dengan proses hidrodistilasi pucuk bunga cengkeh dan pelarut air. Yield minyak cengkeh mengandung unsur eugenol sebesar 86,39%. Minyak cengkeh dipreparasi sebagai zat pengawet dengan konsentrasi 0,05; 0,10; 0,15 dan 0,20% volume per volum larutan. Larutan bioaktif minyak cengkeh diaplikasikan pada buah pepaya pada suhu ruang 25oC dan steril. Sifat fisiokimia dan mikrobiologi ditentukan selama penyimpanan. Hasil menunjukkan bahwa minyak cengkeh pada konsentrasi 0,15% dan 0,2% berhasil menekan: satu hari waktu pembusukan, 10% susut bobot; 0,03 gr asam sitrat/ 100 gr pada uji keasaman tertitrasi; dan 20% nilai pH terhadap kontrol sampel buah pepaya selama masa penyimpanan 16 hari. Selain itu, minyak esensial cengkeh meningkatkan aktivitas antifungi dan antibakteri secara tes in-vitro.

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Clove is a herb which can produce essential oil with its various functions such as insecticide, antioxidant, antifungal, and antibacterial. Effect of clove oil as bioactive in packaging technology on microbiology and physicochemical characteristics of papaya fruit that stored at 25oC and 85-90% relative humidity were investigated. Clove essential oil obtained by hydrodistillation of clove buds and water as solvent. Yield of clove oil contains 86.39%. eugenol substance. Clove oil was prepared as an preservation substance with 0.05, 0.10, 0.15 and 0.20 % concentration of clove oil volume per volume of solution. Preservation substance of clove oil was applied to the papaya fruit at 25oC and sterile room. Physicochemical and microbiological properties determined during storage. The results showed that clove oil at concentration of 0.15% and 0.2% managed to suppress: decay time, 10% weight loss, 0.03 gr citric acid/100 gr in acidity titrable test, and 20% pH value from control sample of papaya fruit during storage. Moreover, antifungal and antibacterial activities of clove essential oil increased in in-vitro test.