

**DIMERIZATION AND APPLICATION OF PYROGALLOL TO PREVENT
CHILLING INJURY SYMPTOMS OF MANGOSTEEN (*Garcinia mangostana*)**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

Dimerization and Application of Pyrogallol to Prevent Chilling Injury Symptoms of
Mangosteen (*Garcinia mangostana*)

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Mangosteens (*Garcinia mangostana*) are highly demanded as exported commodity of Indonesia. The quality of cold-stored mangosteen can be degraded due to pericarp hardening, inner pericarp browning, off flavor and aroma of edible arils, which are the symptoms of chilling injury (CI). This research aimed to observe the pyrogallol as a potential antioxidant to reduce CI symptoms at 4°C for 15 days, using firmness test, enzyme activity assays, and sensory test. The pyrogallol dimer synthesis as an effort to increase the antioxidant activity of pyrogallol was also performed using 2,2-diphenyl – 1 – picrylhydrazyl (DPPH) method of two previous studies. Products were confirmed using TLC, LC/MS/MS, and ¹H-NMR. The antioxidant activity of pyrogallol dimer was also compared with pyrogallol. Dimer of pyrogallol has %Inhibition of 40.77% and pyrogallol has %Inhibition of 92.37% at 500 µM concentration. Pyrogallol has positive effects to reduce pericarp hardening and maintaining flavor and aroma of edible arils, and also mangosteen's inner pericarp browning.

Keywords: Pyrogallol, dimerization, antioxidants, mangosteen, chilling injury.



DEDICATION

I dedicate my thesis work to God Almighty for His abundant blessings,
to my family and the people I love for the massive support and encouragement,

to my fellow thesis fighters for the friendship and bittersweet experience,
to my lecturers, my advisors for the kindhearted knowledge, patience and guidance,
to my university for facilitating the thesis work through smooth and rough times,
to my beloved country Indonesia which I believe is going to be better,
and to my grandfather in heaven who will always be missed.



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