COMPARISON BETWEEN *IN VITRO* AND *IN VIVO* ANTIBACTERIAL ACTIVITY OF *Curcuma zedoaria* FROM MALAYSIA

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This Thesis is dedicated to my Parents
Who supported me for each and every day of my life since birth,
Enabling such a study to take place today

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MS	Murashige and Skoog
$HgCl_2$	Mercury chloride
BA	N_6 – Benzyladenine
IBA	Indole-3-butyric acid
NAA	1-naphthaleneacetic acid
2,4-D	2,4-dichlorophenoxyacetic acid
mm	Millimetere
nm	nanometere
cm	Centimeter
mg/L	Milligram per liter
g/L	Gram per liter
w/v	Weight per volume
v/v	Volume per volume
PGR	Plant growth hormone

Abstract

The rhizomes of the Zingiberaceae family are vegetables widely used in many Asian countries and their medicinal functions have been broadly discussed and accepted in many traditional recipes.

In this study, the antimicrobial activity of extracts of *Curcuma zedoaria* from Malaysia was compared between two systems as *in vitro* and *in vivo*. The comparison was performed against four bacterial strains including two gram negative strains (*E.coli* and *Pseudomonas aeruginosa*) and two gram positive strains (*Bacillus cereus* and *Staphylococcus aureus*) using the agar well diffusion method. Extracts were made in three different solvents; petroleum ether, chloroform and methanol extracts exhibited antibacterial activity. Growth hormones, Indole-3-butyric acid (IBA) and 6-Benzylaminopurine (BAP) were used in the *in vitro* system separately between the range of 0.25-3.5 mg/ l for IBA and 0.5-4 mg/l for BAP and a mix formula containing both hormones using the best ranges after rapid tests.

Petroleum ether extracts showed great comparable antimicrobial results with the *in vitro* system for *Bacillus cereus* and *Staphylococcus aureus* as well as methanolic extracts did. Chloroform extracts showed comparable antimicrobial activity for both *Bacillus cereus* and *Staphylococcus aureus.*

This study is the first report of the antimicrobial comparison between *in vitro* and *in vivo* systems of *Curcuma zedoaria* in Malaysia. *Curcuma zedoaria* has shown antimicrobial activity both *in vitro* and *in vivo* systems based on the results presented in this study.