CHAPTER V

CONCLUSION

In this investigation, the study to find suitable method(s) for the large-scale isolation of oxyresveratrol from the heartwood of *Artocarpus lakoocha* was carried out by first employing five different extraction techniques using three different organic solvents. It was found that the Soxhlet extraction method with EtOH as solvent was the most powerful extraction system. For the separation of the EtOH extract, aluminium oxide with EtOH-CH_2Cl_2 gradient elution gave the highest yield of oxyresveratrol as well as the best resolution. The quantity of oxyresveratrol in plant extracts or products such as puag-haad was successfully determined by a newly developed analytical method using high performance liquid chromatography (HPLC) technique. Validation of the analytical method was performed on its accuracy, precision, linearity, limit of detection and limit of quantitation.

Structure modification of oxyresveratrol yielded thirteen derivatives. All of the obtained analogues were evaluated for tyrosinase inhibitory activity. Only dihydrooxyresveratrol showed higher potency than the parent compound. Kinetic studies revealed that dihydrooxyresveratol was a non-competitive inhibitor with higher affinity to enzyme than that of oxyresveratrol. In addition, dihydrooxyresveratrol was found to be non-cytotoxic to human cancer cells. Based on these results, dihydrooxyresveratrol appears to be a good candidate for development as a skin-whitening agent or an anti-browning agent for vegetable and food.

O-Methylation of oxyresveratrol seemed to introduce cytotoxicity to the structure. Comparison of the IC_{50} values revealed that tetra-*O*-methylated oxyresveratrol was the strongest derivative in all cancer cell lines evaluated, including KB, BC and NCI-H187. *cis*-Tetra-*O*-methylated oxyresveratrol was more potent than the *trans* isomer, having potency comparable to that of the positive control ellipticine. Thus, *cis*-tetra-*O*-

methylated oxyresveratrol has potential applications as an anticancer or as a lead for further anticancer drug development.

Hence, in this study, a potent tyrosinase inhibitor and a strong cytotoxic agent were prepared from the naturally occurring compound oxyresveratrol.