Chapter 5

Conclusion and Recommendation

On the basis of bioassay-directed fractionation, twelve bioactive compounds were isolated from the stem bark of *Glyptopetalum sclerocarpum* Law., a Thai Celastraceous plant species. All of them could be classified as quinone-methide triterpenes. Two compounds, 22β-hydroxy-tingenone (**1**) and 20-hydroxy-20-epi-tingenone (**2**), were previously reported [13-14]. Another major compound, tingenone (**15**), was found for the first time in this plant. The rest : 20-hydroxy-tingenone (**45**), 20,22β-dihydroxy-tingenone (**46**), 20,22β-dihydroxy-20-epi-tingenone (**47**), 20,21α-dihydroxy-22-oxo-21-des-oxotingenone (**48**), 20-hydroxy-22-oxo-tingenone (**49**), 20-hydroxy-22-oxo-20-epi-tingenone (**50**), 21α-hydroxy-20,22-dioxo-30(20→21)*abeo*-21-desoxo-tingenone (**51**), 20-oxo-21-nor-20,21-*seco*-tingen-22-al (**52**), 20-oxo-20,21-*seco*-tingen-21-oic acid (**53**), were all new compounds.

All compounds exhibited strong activity against brine-shrimp, gram-positive bacteria and fungi. Based on structure of tingenone (**15**), which was the most active compound, functional groups in the region of ring E was proved to exhibit some influence over molecule-biomolecule binding, The electrostatic potential at C-20 and C-21, and the hydrophobic character at C-22 were important for brine-shrimp toxicity, while those for gram-positive bacteria and fungi were electrostatic potential at C-21 and C-22, and the hydrophobicity at C-20 (Figure 33). Optimal lipophilic character of the compounds was necessary for activity against all organisms.

The acid-labile property of these compounds was a main obstacle for further drug development. In acidic condition i.e. gastric juice, their structures would be rapidly rearranged to the products with lost of antimicrobial activity, although some toxicity to brine-shrimp might still be present. Thus, further investigation should be conducted in order to improved their stability.

However, if BSL was employed as the general toxicity test, therapeutic doses (MIC) of these compounds would be very close to the toxic doses ($BSLD_{50}$), thus, they were very toxic. Structure modification corresponding to the suggested biomolecule interaction-mode of action might be expected to produce more selective action or provided more detailed information on SAR of these bioactive compounds.