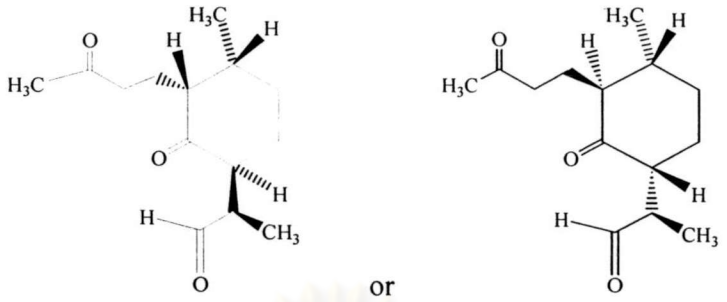
CHAPTER V

CONCLUSION

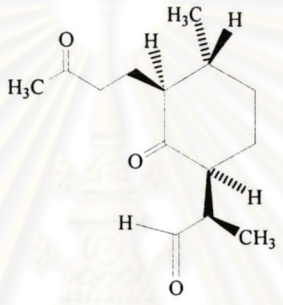
Dihydroartemisinin is the active metabolite of all artemisinin compounds. It rapidly reduces parasitemia in-patients with chloroquine-sensitive and chloroquine-resistance falciparum malaria. The clinical test showed that DHA has high efficiency. However, it was found that DHA is unstable. Either long time storage or high temperature, DHA decomposed to give its degradation products. Hence, the main objective of this work is to analysis of chemical structure and toxicity test of its degradation products.

DHA is thermally labile to give its degradation products. These compounds were separated by HPLC using C_{18} column with eluent as acetonitrile-water (50:50 by volume) at flow rate of 1.5 ml/min following UV detection at 205 nm. The chromatographic separation of these compounds gave a major products consisting of 2 epimers represented in Figure 11 that are compound 1, (2R, 3R, 6S)-2-(3-oxobutyl)-3-methyl-6-[(R)-2-propanol]-cyclohexane or (2S, 3R, 6R)-2-(3-oxobutyl)-3-methyl-6-[(R)-2-propanol]-cyclohexane and compound **2**, (2S, 3R, 6S)-2-(3-oxobutyl)-3-methyl-6-[(R)-2-propanol]-cyclohexane. Their structures were determined from spectral data, including MS, UV, IR, NMR and also by comparison with the spectral data of previous reports.



or

compound 1



compound 2

Figure 11 Major compounds of degradation products of DHA

Isolated compounds were tested in biological activity. *In vitro* activity of them against 8 cell lines showed that degradation products were toxic lower than parent compound which was toxic to IEC-6 and Vero cell lines. Moreover, acute toxicity study showed that they were more safety than DHA product. For antimalrial activity testing, they showed no strong inhibition compared to parent compound, DHA.