

## CHAPTER V

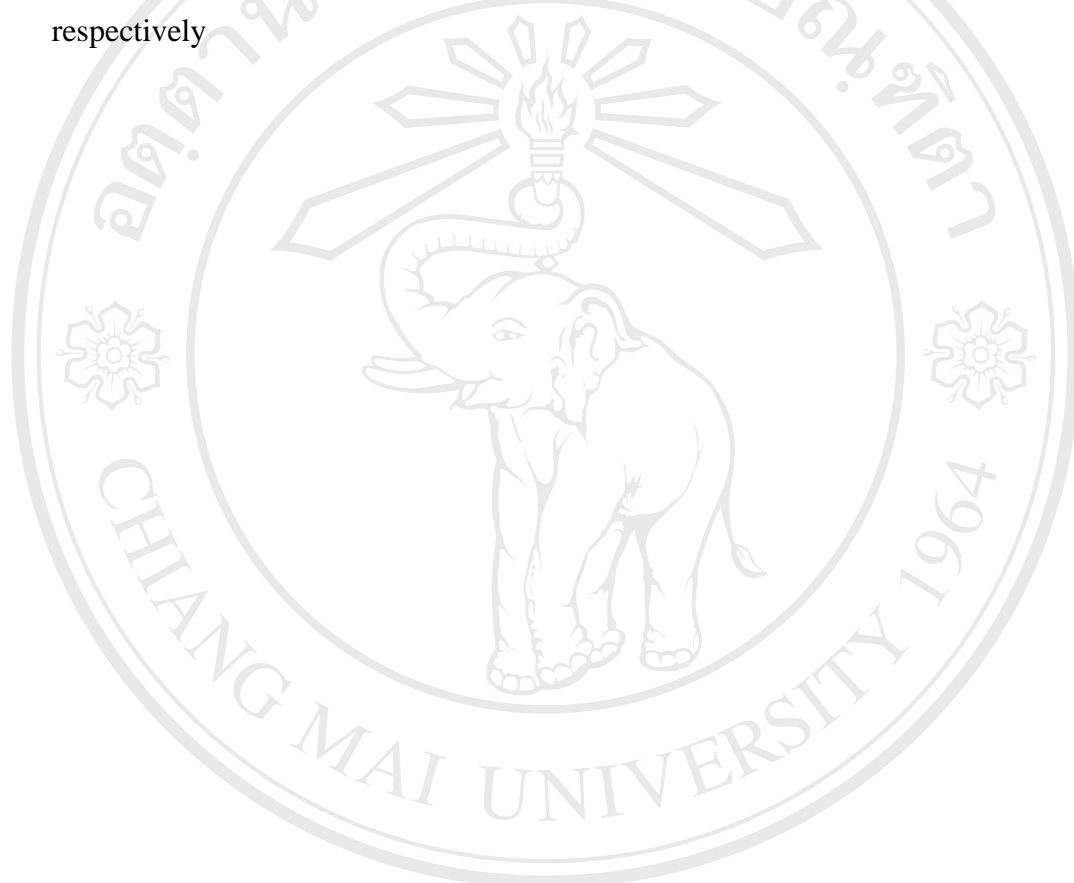
### CONCLUSION AND RECOMMENDATION

Capillary electrophoresis (CE) was proved to be able to analyse residues of carbofuran, parathion methyl and cypermethrin in strawberry fruits as well as GC and HPLC.

Using CE for this analysis, it was necessary to try to find suitable conditions for running e.g. capillary size, voltage of electricity, type and pH of buffer and total wavelength of detector. Results showed that the same optimum conditions for analysis of the three pesticides were the size of column with total of 50 cm long, the length to detection point of 40.2 cm, 75  $\mu\text{m}$  i.d, controlled temperature at 25 °C, and the type of buffer used was sodium tetraborate which contained sodium dodecyl sulfate (SDS). For the different conditions that suit for each pesticide analysis : Carbofuran, running buffer at pH 7.5, with electric voltage at 15 kv and UV detector at wavelength of 205 nm; parathion methyl, running buffer at pH 8.5, with electric voltage at 10 kv and UV detector at wavelength of 254 nm, and cypermethrin, running buffer at pH 8.0, with UV electric voltage at 25 kv and UV detector at wavelength of 254 nm.

Amounts of carbofuran parathion methyl and cypermethrin residues detected in strawberry fruits at 0, 1, 3, 5, 7, 10 and 14 days analyzed by HPLC, GC-FPD and GC-ECD were compared with CE. The amounts of carbofuran were 2.859, 2.813, 2.475, 1.982, 1.452, 0.596 and 0.354 ppm by HPLC and 2.69, 12.666, 2.370, 1.912, 1.309, 0.461 and 0.385 by CE, parathion methyl detected by GC-FPD were 10.313, 6.219, 2.670, 2.208, 1.803, 1.204 and 0.941 and by CE were 10.143, 6.059, 2.526, 2.063, 1.536, 1.024 and 0.648 and cypermethrin detected by GC-ECD were 15.067, 13.440, 7.541, 6.463, 4.788, 4.208 and 4.411 and by CE were 14.835, 13.182, 7.279, 6.219, 4.562, 4.586 and 3.857. It can be concluded that CE at the optimum conditions are suitable for analyses of carbofuran, parathion methyl and cypermethrin. There is no statistical difference ( $p < 0.05$ ) when compared the results with that obtained from using GC and HPLC

After calculating expression of the CE analysis results, it was found that the CE can be used successfully to determine the amounts of carbofuran, parathion methyl and cypermethrin residues in strawberry fruits : The average recoveries were 99.20 %, 98.40 % and 97.33 %; relative standard deviations (RSD) were 0.011 %, 0.097 % and 0.016 %; the detection limits were 0.022, 0.024 and 0.004 with quantitations of 0.076  $\mu\text{g/mL}$ , 0.078  $\mu\text{g/mL}$  and 0.016  $\mu\text{g/mL}$  for carbofuran, parathion methyl and cypermethrin, respectively



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