CHAPTER V

CONCLUSION & RECOMMENDATION

For the physicochemical properties, all samples showed decreased in iodine value as heating time was prolonged due to the destruction of double bonds. However, at low heating temperature (120 °C), not much changes were observed for all samples. When samples were subjected to higher heating temperature, sample **c** (contained 30 % lard) showed the biggest changes in iodine value. Same pattern was observed when samples were tested for peroxide value at low temperature (120 °C), not much changes was observed. At 180 °C and 240 °C, sample **b** (contained 15 % lard) and **c** showed a decreased in peroxide value due to the formation of secondary oxidation products. This might be due formation of secondary oxidation products. In terms of color, as time was prolonged, samples becomes darker (decreased L* value and increased a* value) due to formation of non volatile decomposition. When data was analyzed using PCA, all samples (15 and 30 % lard) and control (0 % lard) were clustered according to the heating temperature and showed no difference for samples and control.

When analyzing the pattern of volatile compounds using PCA by GC-MS-HS method, it was found that the volatile compounds were clustered according to their heating temperature at 120 °C, 180 °C and 240 °C for samples with lard or without lard. This clustering indicates that GC-MS-HS could not distinguished samples and control at 120 °C, 180 °C and 240 °C.

Since volatile compounds are being correlated with fatty acids, it is suggested that further study would also include analysis in fatty acids by GC-FID to observe the relationship between fatty acids and the volatile compounds. In this research, a fresh RBD palm oil was used instead of recycle oil and was being spiked with lard to emulate the recycle oil, therefore, actual comparison should be made on recycle RBD palm oil from the market and the same type of oil in a fresh form, spiked with known percentages of lard in the future. The usage of solid phase microextraction (SPME) to replace the limitation of headspace might be an advantage as SPME is more sensitive and could improve the detection limits as it has the ability to directly extract and concentrate the sample to the extraction fibre.