CHAPTER 5
CONCLUSION

Synthetic esters in this study could be synthesized from transesterification and hydrogenation process. It found that cyclohexyl ester product was selected for use as lubricating oil.

The optimum conditions for transesterification of coconut oil and cyclohexanol was 90°c for 3 hours. The physical and chemical properties were presented as follow: color was 0.5, pour point was -6°c, viscosity index was 154.4, flash point was 176°c and oxidation compound were 3.23%wt.

Hydrogenation process was operated in a batch reactor under hydrogen. The used catalyst contained 3%wt of platinum supported on alumina. The optimum conditions for hydrogenation was 5%catalyst concentration, under hydrogen partial presssure of 100 psi, at 150°c temperature and reaction time was 3 hours. The product was 90.15% yield.

From this study, it could be concluded that the main composition of hydrogenated ester was hydrogenated esters of laurate. From experimental result, it was found that hydrogenated cyclohexyl ester had some prominent properties which is suitable for use as lubricant in two-stroke engine. The above mentioned properties were high oxidation stability(380°c), low pour point (-6°c), flash point (176°c).

Hydrogenated cyclohexyl ester product had high viscosity and low pour point, contrast to any other hydrogenated ester products that have higher

viscosity in accordance with higher pour point. This is the advantage of cyclohexyl ester product. Although, hyroganated cyclohexyl ester product had low pour point. It wasn't disadvantage due to the low flash point of two cycle lubricant itself and also was the completed combustion fuel.

It could be concluded that cyclohexyl ester lubricant could be use as alternative in mineral oil that is the principle component of two- cycle lubricant for environmental conservation that make sure that it was a synthetic lubricant for the environment safe.

Up to these, all of hydrogenated ester could be use as VI improver in lubricating base oil to increase the viscosity index.