CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

1.1 Conclusions

1. Resistant starch type III (RS_3) was producted from sago starch by using variation of time and variation of citric acid concentration through lintnerization and lintnerization-autoclaving methods. Variation times (3; 6; 12 h) were not affect resistant starch production, but variation of citric acid concentrations (1; 1.5; 2 N) resulted different of RS contents. The highest RS content was obtained by using 2N of citric acid concentration through lintnerization-autoclaving method.

2. Physicochemicals of RS were compared by native sago starch, hydrolyzed starch by distilled water and lintnerized starch. Amylose content decreased after hydrolyzed by distilled water and lintnerization, but increasing by using lintnerization-autoclaving method. Protein and fat contents decreased after hydrolysis, but crude fiber content increasing, the highest value was obtained lintnerized-autoclaved starch. Lintnerized-autoclaved starch also exhibited the most resistant than other samples when hydrolyzed by α-amylase, pancreatic and pepsin. It also was proven with its microstructure analysis which had compact and rigid structure than others. UV/visible spectra showed the absorbance intensity decreased after lintnerization while increased when treated with hydrolysis by distlled water and lintnerization-autoclaving method. The RVA viscosity, swelling power and water holding capacity values reduced after all treatments. The lowest of these values were obtained lintnerized-autoclaved starch. Solubility at 95^{o}C increased after acid treatment.

3. Oil in water emulsions were also analyzed by mixture of RS and casein, compared also using mixture of RS and SPI, for comparison emulsions were made from Hylon VII using emulsifier (casein or SPI). Viscosities of emulsions from RS casein were lower (20.00 cP-31.99 cP) than those of RS-SPI (37.05 cP-52.07 cP). The highest L* value of RS-casein emulsions was

84.40, made from 5% casein+5% Hylon VII+ 5% fish oil while highest L* value of RS-SPI emulsion was 85.34, made from 7.5% SPI and 7.5% fish oil. Emulsion capacity and emulsion stability values were better gotten using RS-SPI than using RS-casein. The highest of emulsion capacity made from RS-casein was obtained 5.67% (3.75% casein+ 3.75 RS + 7.5% fish oil) while the highest that of RS-SPI was obtained 11.33% (5% SPI + 5% RS + 5% fish oil). The highest of emulsion stability value was gotten from mixture of emulsifier (Casein or SPI) and RS, but the higher value of emulsion stability of emulsion capacity was obtained when using mixture of RS and SPI (11.33%) than that of RS and casein (8.00%). For storage period, the lowest peroxide and anisidine values of mixture RS-SPI and RS-casein were resulted from 5% emulsifier (casein or SPI) + 5% RS + 5% fish oil, and the lowest percentage of these values was exhibited emulsion using mixture RS-SPI than RS-casein.

1.2 Recommendations

1. RS production can be researched using hydrolyzed by distilled water followed autoclaving.
2. RS can be used to functional bakery food, cereals and other foods because it contain diatary fibers which useful to body human.