Wanwilai Singchoo 2010: Encapsulation of *Centella asiatica* Active Compounds by Chitosan-Pectin Matrix. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Masubon Thongngam, Ph.D. 116 pages.

Centella asiatica is local Thai herb that is used as medicine to cure various diseases. The most interesting active compounds in *Centella asiatica* are triterpene compounds. These compounds were easily degraded in the stomach. In this research, it was aimed to characterize the chitosan-pectin matrix in order to encapsulate triterpene compounds and protect them from acidic condition in the stomach and subsequently deliver to the intestine. The purpose of this study was to examine the effect of the chitosan-pectin content, pH and salts on the yield of gel content, rheological properties (oscillatory shear measurement) and encapsulation efficiency of chitosan-pectin matrix. The encapsulation of *Centella asiatica* active compounds in chitosan-pectin matrix was determined by high performance thin layer chromatography (HPTLC). The triterpene compounds from *Centella asiatica* investigated in this study were asiatic acid, madecassic acid, asiaticoside and madecassoside. The results show that chitosan-pectin; 0.25-0.175 %w/v at pH 5 gave the highest yield of gel content (8.96 g/100 mL), storage modulus (G'; 7180 Pa) and encapsulation efficiency (53.67 %). When the pH of the solution was changed from 5 to 3, the storage modulus, the yield of gel content and encapsulation efficiency of chitosan-pectin matrix were lowered for almost all chitosan-pectin concentrations. In the presence of salts with different ion species (NaCl and $CaCl_2$), the complex characters were different. In the presence of sodium chloride (0-150 mM), gel formation of the polyelectrolyte complexes were similar to that of no salt addition. However, when calcium chloride was used (0-150 mM), the gel structure of complexes was more homogeneous. In addition, as the concentration of salts increased from 0 to 150 mM, the storage modulus also increased. Upon using 100 mM NaCl and 50 mM $CaCl_2$, the encapsulation efficiency was the highest (68.03 and 70.19 %, respectively). Then the release of *Centella asiatica* active compounds by chitosan-pectin matrix at pH 5 was determined. The release of triterpene compounds were studied in simulated gastrointestinal tract (pH 2, 5, 6, 7 and 9). The results show that chitosan-pectin; 0.25-0.175 %w/v at pH 5 with added 100 mM NaCl was suitable for the controlled release of *Centella asiatica* active compounds because the matrix is stable at the stomach (pH 2) and could well release at the small intestine (pH 5).

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