



CHAPTER I

INTRODUCTION

The castor oil is one of an important agro-industry product. The castor oils are almost exported and its price is usually competitive in the world market. During in 1981-1984, the average quantity of castor oil export was about 8,730 tons/year and its value was about 225 million baths/year (1). The sixty percent of exported castor oil was used in the automotive industries, the others were used in cosmetic, lubricants, adhesives, etc. Because of having many functional groups, the castor oil could be derived to many products by the chemical reaction for examples; hydrogenated castor oil, dehydrated castor oil, sulphated castor oil, etc. So, it is necessary for Thailand to develop researching and using the castor oil and castor oil derivatives in order to encourage Thai farmers to grow castor plant instead of other low-price crops and to increase amount quantities and values of exportation. In addition, the castor bean would also be developed to grow in the appropriating areas

Hydrogenation is another means of modifying fat and oil. Methyl ricinoleate is prepared from esterification (Alcoholysis) of castor oil by acid or basic catalyst with methanol. Then, the catalytic hydrogenation of methyl ricinoleate produces the methyl ester wax (Methyl 12-hydroxystearate). This hydrogenated product is white waxy solid, insoluble in water, limited solubility in organic solvents. It is used in low temperature plasticizer for rubber and plastic; pigment dispersion for elastomer and plastic; and

composition of adhesives, inks, and cosmetics. It is a convenient source of hydroxystearic acid for glycerine-free multipurpose lithium grease. So, the hydrogenation of methyl ricinoleate should be studied to produce methyl ester wax.

The objectives of this thesis are :

- (1) study of the hydrogenation efficiency of the commercial nickel catalysts.
- (2) determination of the suitable operating condition for methyl ricinoleate hydrogenation with the best commercial nickel catalyst.
- (3) study of the effect of hydrogen feeding on hydrogenation of methyl ricinoleate, and
- (4) study of the effect of storage time of methyl ricinoleate on hydrogenation.