



CHAPTER I

INTRODUCTION

High prevalence of nutritional deficiencies can be found within the hospitalized medical and surgical population.⁽¹⁻³⁾ Undernutrition is often cited as the principle cause of death⁽⁴⁾ in chronically ill patients who die after a protracted wasting illness. Since nutritional status is closely related to treatment outcome, patients who are malnourished when admitted to the hospital have emphasized the need for nutritional support. Many malnourished patients with normal gastrointestinal function are candidates for enteral nutrition therapy.⁽⁵⁾ Pareira,⁽⁶⁾ in 1954, reported weight gain and positive nitrogen balance in patients who received nutritional therapy by tube feeding. Enteral nutrition has been shown to be a safe and effective method of delivery for extended periods of time.⁽⁵⁾ Nowadays, a wide variety of enteral formulas are commercially available. The use of these formulas in hospitals increases dramatically since they are claimed to be complete in all essential nutrients.⁽⁷⁾

There are wide variety of protein sources in commercial formula such as milk protein, egg white, casein, soy protein isolate or crystalline amino acid. In economically advanced countries milk protein is relatively cheap, as compared with animal proteins of similar quality.⁽⁸⁾ Milk is considerably a highly nutritious food. However, lactose, the principle sugar in milk, is a major problem in milk protein-based enteral formula. Milk protein-based formula results in lactose intolerance in various population groups.⁽⁹⁾

Flatz et al.^{'10'} and Keusch et al.^{'11'} reported prevalence rate of Thai adult lactose intolerance to be 95 percent and 85 percent, respectively. Whenever the lactose is ingested, it passes undigested to the large intestine. There it is fermented, by the colonic flora, with short-chain fatty acids and hydrogen gas as major products. The gas produced henceforth may cause abdominal distention and pain. Diarrhea may also result from the fermentation products.^{'12'} Soy milk is substituted for cow milk in lactose intolerance,^{'9'} but it is incomplete protein. Soy protein does not provide complete essential amino acid as milk protein.^{'13'}

Low lactose milk protein-based formula was produced by utilizing lactose hydrolyzed milk. Lactose in milk was hydrolyzed by lactase available commercially was derived from yeast.^{'14'} Low lactose milk-based medical food is used in lactose intolerance who has apparent symptoms of lactose maldigestion.

This study was designed and investigated to

- (1) formulate low lactose milk-based medical food by using spray drying method
- (2) reduce lactose content in milk by lactase and activity of lactase used in the hydrolysis of milk lactose was also studied
- (3) evaluate physical properties, chemical compositions and protein quality of the finished product.

จุฬาลงกรณ์มหาวิทยาลัย