

## CHAPTER 1 INTRODUCTION

### 1.1 Background information

Yoghurt is the best known of all cultured-milk products, and the most popular product almost all over the world. Consumption of yoghurt is the highest in countries around Mediterranean, in Asia and in Central Europe (Teknotext, 1995). In recent years, some yoghurt products have been reformulated to include live strains of *Lactobacillus acidophilus* and species of *Bifidobacterium* (known as AB cultures) in addition to the conventional yoghurt organisms, *Streptococcus thermophilus* and *Lactobacillus bulgaricus*. Therefore, bio-yoghurt is a yoghurt that contains these live probiotic microorganisms. The presence of these probiotic organisms may give rise to a claim of beneficial health effects for the consumption of the product (Lourens-Hattingh and Viljoen, 2001).

Green soya bean (*Glycine max* L. Merr.) is one of the most important high protein vegetable crops in Asia. The soya bean has been cultivated for a long time, probably from 4,000–5,000 years ago in China for food and medicines (Nguyen, 1995). Although, it is a minor crop worldwide, it is quite a popular product in East Asia. Green soya bean is consumed mainly as a snack, but also as a vegetable, an ingredient in soups or process into sweets. In Japan, green soya beans are known as edamame and are sold fresh or frozen in the market (Catharina *et al.*, 1999). Frozen green soya bean, which is the major type of green soya bean imported by the Japanese markets, is a detached type which is frozen using an Individual Quick Frozen technology (Nguyen, 1995). International trade in green soya bean focuses on supplying Japan where its total demand is approximately 160,000 ton per year. In West, frozen and canned green soya beans have appeared in the market (Catharina *et al.*, 1999).

In the north of Thailand, there are many factories produce frozen green soya beans to be exported to other countries. Lanna Agro Industry Co., Ltd. in Chiang Mai is one of these factories that produce frozen green soya beans to be exported to Japan under a requirement of consumers. The standard of the frozen green soya beans (AGS 292 and No.75 species) is 1 kg of the beans must contain green soya beans over 340 pods, and the pods have a length of more than 4.5 cm and a width of more than 7 mm. In one pod, it must have more than 2 seeds and the pods have green color. The pods must be free from yellow or black spots or from the presence of any diseases and insects. Under a tight standard of frozen green soya beans, in the real practice, there are many beans that are fallen below this standard. The company is selling these lower grade beans at a lower price as a lower grade bean and for animal feeds. However, these lower grade beans still have a same nutrition value like the other beans that are exported to Japan. Therefore, an alternative process to increase the value of the lower grade beans will give benefit not only utilizing their nutritional value in a better way, but also providing customers with an innovative product and increasing the income of green soya bean companies.

One of the alternative products is frozen yoghurt. The popularity of frozen yoghurt is growing at the moment. The product is often enjoyed as summertime treats and it makes a great dessert at any time of the year. Frozen yoghurt is prepared by freezing while stirring a pasteurized and cultured mixture containing ingredients similar to a mixture of an ice cream. It has all the refreshing qualities of ice cream but combined with yoghurt like flavor and taste (Liu, 1999). Some people prefer the product than an ice cream because it is often contained lower fat and calories than the ice cream. In Thailand, frozen yoghurt has not been popular and the product has not been commercially sold in the market yet. However, the potential of the product to be successfully marketed cannot be underestimated, since the Thai people are people who are conscious with healthy food products. Since the name of frozen yoghurt is not a familiar phrase and the words are difficult to be directly transferred to Thai words, the name of the frozen yoghurt in this project would be recognized as a 'yoghurt ice cream'. The last name would also represent the actual processes to make the product.

## 1.2 Objectives of the research

1. To study the effect of green soya bean yoghurt ice cream ingredients on the physical and chemical properties and the sensory evaluation of the green soya bean yoghurt ice cream.
2. To find out the optimum composition for green soya bean yoghurt ice cream ingredients.
3. To study the optimum time and temperature incubation in the production of the green soya bean yoghurt ice cream.
4. To investigate the suitable storage temperature and the shelf life period of the green soya bean yoghurt ice cream.

## 1.3 Usefulness of the research

1. Increasing the value of green soya bean as an economic plant of Thailand, especially for the one that has been rejected to be exported abroad.
2. Providing the optimum ingredient composition and processing condition for the production of green soya bean yoghurt ice cream, including its characteristics during a subsequent storage time.
3. Providing more choices for Thai's consumers and beyond for a new healthy food product that contained probiotic bacteria.
4. Supporting the green soya bean's farmer by increasing the product diversification, which could help in recovering the economy situation of the country.
5. Increasing the database for probiotic bacteria in fermented food products.