CHAPTER I
INTRODUCTION

1.1 Background

Indonesian people have high risk of osteoporosis due to calcium (Ca) deficiency. According to the research done by Pusat Penelitian dan Pengembangan Gizi dan Makanan Departemen Kesehatan RI and PT Fonterra Brands in 2005 which used 22,799 men and 42,928 from 16 cities in Indonesia, 41.70% is people with prevalence of osteopenia and 10.30% is the prevalence of osteoporosis. Furthermore, the average dietary intake of calcium of Indonesian people is 254.00 mg/days or 77% lower than RDA of calcium for people with ages between 19–29 which is 1100 mg/days years old (Depkes RI, 2008).

Pohpohan (*Pilea melastomoides*) is indigenous plant of Indonesia especially at West Java. Based on Almatsier (2005), pohpohan is known rich in calcium, about 744.00 mg calcium per 100 g pohpohan leaves, higher than *katuk* leaves (540.00 mg), spinach leaves (276.00 mg), and fresh milk (122.00 mg). However, pohpohan as vegetables also contains antinutrient such as phytic acid that can affect the availability of the nutrient, especially minerals by chelating metals ions. Commonly, the utilization of pohpohan is still limited, which is consumed in form of fresh leaves, namely *lalapan*. In order to increase the value of pohpohan, the addition of pohpohan in certain food product is highly expected.

Edible seaweed sheet or *nori* is one of snack that is categorized as nutritious food. It contains low calories and low fat, but provides essential protein, vitamin, and minerals. Usually *nori* is made from genus Porphyra. However, the
The most common seaweed that are cultivated in Indonesia is *Eucheuma cottonii* instead of *Porphyra* sp. Therefore the addition of glycerol is need to improve the tensile properties of the *nori*. Unfortunately, the calcium content of the *nori* is still low (Gebhardt and Thomas, 2002). Therefore the addition of pohpohan into the formula of *nori* might increase the calcium content of the *nori*.

1.2 Research Problem

Indonesian people still lack in daily consumption of calcium. Pohpohan which is indigenous plant in Indonesia contains high calcium, however the utilization is still limited and it also has a distinct smell and astringent taste which might unfavorable for some people to eat directly. Pohpohan as green leafy vegetable also contains anti-nutrients, such as phytic acid that may inhibit the absorption of Ca. *Eucheuma cottonii* is abundant in Indonesia but the use as material in the making of edible seaweed sheet is not common. Therefore the pretreatment of pohpohan may hopefully decrease the anti-nutrient compound of pohpohan. Moreover, the addition of pohpohan into the formula of edible seaweed sheet made of *Eucheuma cottonii* might increase the calcium content of the edible seaweed sheet.

1.3 Objectives

1.3.1 General Objective

The general objective of this study was to develop the utilization of pohpohan leaves as source of calcium incorporated to *Eucheuma cottonii* seaweed in the making of edible seaweed sheet (*nori*).
1.3.2 Specific Objectives

The specific objectives of the study were:

1. To determine the proper method of pretreatment of pohpohan leaf powder to decrease the phytic acid,

2. To determine the effect of different concentration of glycerol and ratio of pohpohan leaf powder to seaweed on physical and chemical characteristic of edible seaweed sheet,

3. To determine the selected formula of edible seaweed sheet based on panelist preferences on sensory evaluation, and

4. To evaluate nutrient composition of the edible seaweed sheet from the selected formulation including Ca content.