

CHAPTER I

INTRODUCTION

1.1 Background

Torbangun (*Plectranthus amboinicus* L.) is known as a medicinal plant that contains rich micronutrients. These days, *Torbangun* plants are investigated and studied for their nutrients and health benefits. Based on the research by Santosa (2005), *Torbangun* leaves contains high vitamin C, vitamin B1, vitamin B12, β carotene, niacin, carvacrol, calcium, fatty acids, oxalate, and fiber. In addition, Damanik (2005) reported that *Torbangun* leaves have been traditionally used and consumed by North Sumatra people, *Bataknese* people, as food that can improve the quality and quantity of breast milk and the nutritional status of newborn babies. Commonly, *Torbangun* leaves are consumed by sowing with coconut milk, as well as, making into vegetables soup.

Despite the availability of *Torbangun* leaves in Indonesia, utilization of *Torbangun* leaves as commercial products are still limited. Nevertheless, there are some earlier studies which aim to develop *Torbangun* products as supplements special for women with Premenstrual Syndrome (Alfitra, 2010); cookies with *Torbangun* flour for a breastfeeding mother to increase the breast milk production (Dewi, 2011); and *Torbangun* leaf powder in capsules to increase the breast milk quality and quantity (Andriani, 2011). Thus, *Torbangun* leaves commonly used as a functional food or drink that can be used to trigger and increase breast milk natural production as well as improve its quality (lactagogue). Besides, there are some

ingredients commonly used as lactagogue, such as moringa, fenugreek, nuts, and sweet leaf (Hauck *et al.*, 2011).

Beverages are primary human needs that are craved and strived to be more available for the types, quality, and quantity. People become more aware of their health and try to keep up their healthy condition by consuming healthier products, such as functional drinks. There are some beverages which categorized as functional drinks, such as probiotic, energy drinks, juice, milk, and tea. One of the popular commercial functional drink is a plant-based milk product made by nuts. Nut milk products include soymilk, green bean milk, and almond milk, which contain high protein, calcium, vitamin B12, riboflavin, phosphorus, and lactagogues (Darmasena *et al.*, 2015). Almond milk is becoming one of the most popular plant-based milk due to its unique taste and its availability in the market. Many breastfeeding mothers choose to eat almond or drink almond milk to increase the quality, amount of their breast milk, and increase the body fluid (Darmasena *et al.*, 2015). Underlying the product development, utilization of *Torbangun* leaves as a functional drink together with almond milk and fenugreek seeds are expected to increase the nutritional value and variety of functional drink in the market.

1.2 Research Problem

Utilization of *Torbangun* leaves as commercial product is still limited. Thus, utilization of *Torbangun* steeps into functional drink product as the development of the products that is available in the market is needed. In addition, *Torbangun* leaves, fenugreek seeds, and almond milk are known as lactagogue that can increase quality

and quantity of breast milk. Besides, functional drink products for nursing mother that are available in market still do not provide a clear overview on the nutritional content. Thus, development of functional drink product using these ingredients and series of analysis to provide clearer overview on the nutritional content is needed.

1.3 Objectives

1.3.1 General Objectives

The general objectives of this research was to produce functional drink with high antioxidant properties and optimum sensory perception by using the right amount *Torbangun* leaves, fenugreek seeds, and almond milk.

1.3.2 Specific Objectives

The specific objectives of this research were:

1. To utilize *Torbangun* leaves in a beverages product as a functional drink
2. To determine the best formulation based on antioxidant activity, phenolic content, flavonoid content, and sensory perception of functional drinks which consists of *Torbangun* leaves, fenugreek seeds, and almond milk.
3. To study the different effect of different formulation in terms of nutrition, antioxidant, taste, and aroma.
4. To evaluate the acceptability of organoleptic parameters of almond milk with addition of *Torbangun* leaves and fenugreek seeds steps.