

CHAPTER I

INTRODUCTION

1.1 Background

Nowadays, a healthy life becomes a concern for people. They tend to consume food and beverage containing various nutrients including antioxidants that can help to maintain their health and prevent them from diseases.

Betel nut is one of the herbal medicines commonly used in Asia. The application of betel nut is rarely used in the beverage product. It is commonly used as antifungi, antibacteria, anticancer, anti-inflammatory, and antioxidant. Betel nut also contains various nutrients including antioxidants such as polyphenols, alkaloids, and tannins (Ling *et al.*, 2010 and Roy and Dorak, 2010).

Green tea is a beverage consumed by Japanese and Chinese people for centuries. This beverage contains many nutrients including antioxidants such as polyphenols including catechins, quercetin, kaempferol, and myricetin. The major components that give health benefit are catechins that have anti-oxidative, anti-carcinogenic, anti-microbial, anti-viral, anti-inflammatory, and anti-diabetic properties (Ananingsih *et al.*, 2010 and Wang *et al.*, 2000).

Although betel nut contains a lot of antioxidants, beverage from this commodity has not been commercially produced. People might not drink beverage that made only from betel nut due to its unpleasant flavour. Therefore, mixing betel nut with green tea is expected that people will be more interested to drink it. The addition of betel nut extract to the green tea may give value-added to the beverage because the antioxidant of this beverage might be higher compared

to green tea or betel nut only. Besides that, the application of betel nut into green tea could increase the preference of the consumer due to aroma and taste of the green tea. This research is conducted to determine the characteristics of beverage that is prepared from betel nut and green tea by applying proper extraction methods and ratio between betel nut (*Areca catechu* L.) extract and green tea to produce beverage that have high antioxidant activity.

1.2 Research Problem

Betel nut is a plant that grows in Indonesia. Its contains various antioxidants such as polyphenols, alkaloids, and tannins. Most of people not consumed betel nut because of its unpleasant flavour although it contains high antioxidant contents. Green tea is one of beverages that gives health benefits due to its high antioxidant content such as polyphenols (catechins, quercetin, kaempferol, and myricetin). Therefore, the addition of betel nut extract into green tea beverage is expected to increase antioxidant activity in the beverage and may mask the unpleasant flavour of betel nut, so the preference of the consumer become higher than the preference of the beverage made from betel nut only.

1.3 Objectives

1.3.1 General Objectives

The general objectives of this research were to study the antioxidant activity of betel nut (*Areca catechu* L.) extract and to develop a beverage product which contain betel nut extract that was incorporated into green tea.

1.3.2 Specific Objectives

The specific objectives of this research were:

- 1.) To determine extraction methods suitable to extract betel nut (*Areca catechu* L.).
- 2.) To determine a solvent suitable to extract the betel nut (*Areca catechu* L.).
- 3.) To study the effect of a ratio of betel nut (*Areca catechu* L.) and green tea in the beverage on the antioxidant activity and other physicochemical characteristics of the beverage.

