CHAPTER I

INTRODUCTION

1.1 Background

Cajuputs candy is a functional food that has been developed since 1996. The first product of Cajuputs candy is in the form of hard candy which are made from sucrose, glucose syrup, water, cajuput and peppermint oil. Cajuputs candy has a function to maintain oral health, mainly due to the function of cajuput oil and peppermint oil (Christie, 2012). The combination of cajuput and peppermint oil can inhibit biofilm formation of *Streptococcus mutans* serotype c. Furthermore, it can also suppress the growth of *Candida albicans* (Wijaya, *et al.,* 2011).

Leaves of green tea are rich in phenolic compounds, particularly flavonols. Green tea powder reduces volatile sulfur compounds (VSCs) in mouth air that causes halitosis. Tea polyphenols are known to have antimicrobial and deodorant effects (Chatterjee, *et al.*, 2012). Green tea polyphenols are known to have antioxidant activity. Matcha is a type of green tea, which is finely ground and is made by special condition of viticulture and processing. Furthermore, when compared to usual green tea, matcha has a significantly higher antioxidant value. Matcha has antioxidant activity of 218.46 TE mg/g tea compared to regular green tea which has 34.20 TE/mg/g tea (Tejero, *et al.*, 2014). The use of matcha extracts as natural ingredients in foods is increasing in these past years (Lorenzo and Munekata, 2016). Matcha can be added as a flavor substance as it gives positive effect on its flavor perception.

Gokou, yabukita and samidori cultivars have high yields and high brewing quality in terms of color, aroma and taste (Yagi, *et al.*, 2010). These cultivars came from *Camellia sinensis* (L.) O. Kuntze var. *sinensis*. Pusat Penelitian Teh dan Kina (PPTK) develop a superior green tea clone which came from *Camellia sinensis* (Master) Kitamura var. *assamica* that are stated to have high antioxidant activity. Sensory acceptability and antioxidant properties of different tea products are affected by different cultivars and variety of the tea (Karori, *et al.*, 2007). However, when matcha is added as a flavor, its sensory acceptability has an optimum concentration. Therefore, the optimum concentration that has both optimum value of antioxidant activity and sensory acceptability is needed to be researched. Hedonic test can be used to determine the sensory acceptability of a food product.

1.2 Research Problem

Different types of matcha might give different sensory perception in terms of color, taste, aroma and mouthfeel. There is not much information about the antioxidant capacity of each type of matcha, therefore, it is needed to choose the type that has high antioxidant properties with suitable palatability. Furthermore, the addition of matcha to hard candy in a powder form might affect the crystallization process of the candy, thus will affect the candy texture and its sensory acceptability. Therefore, an optimized concentration of matcha in terms of its sensory acceptability and its functional properties, antioxidant, is needed to make a hard candy that is not only beneficial to the consumer's health, but also palatable to them.

1.3 Objective

The objectives of this experiment are divided into general and specific objective, which are listed below.

1.3.1 General Objective

The general objective of this experiment is to develop matcha cajuputs candy with optimized sensory acceptability and antioxidant properties.

1.3.2 Specific Objective

The specific objectives of this experiment are:

1. To determine the compatible matcha type in terms of antioxidant properties and sensory acceptability.
2. To determine the optimum concentration of matcha addition based on its antioxidant properties and sensory acceptability by one-factor Response Surface Methodology (RSM) method.