CHAPTER I
INTRODUCTION

1.1 Background

According to Spillane (2006), children have higher preference towards sweet taste compared to adult. It is assumed that children are less sensitive to sweet taste; therefore they need higher level of sugars. According to Drewnowski et al. (2012), young children have higher sweetness preference compared to adolescent. However, higher consumption of sugar affects children dental health. According to Oral Health Education Unit of Hong Kong (2006), most common dental problems found in children are tooth decay and early childhood caries. Higher frequency of eating increases the chance of tooth decay, moreover, Riva and Cor (2003) also mentioned, higher sugar availability inside mouth will increase chance of bacterial growth which leads into caries formation and causing teeth decay.

Previous research by Jedlickova et al., (1993); Wijaya et al., (2011) and Wijaya et at., (2014) mentioned that cajuput oil contain about 10% crystal phenolic compound which is 3,5-dimethyl-4,6-di-0-methylphloroacetophenon that is known as antimicrobial compound and able to prevent dental caries. Addition of cajuput oil into confectionery product is expected to prevent biofilm formation by Streptococcus mutans. Cajuputs candy has a potency to prevent formation of dental caries, by preventing growth of Streptococcus mutants, Candida albicans, and Streptococcus sobrinus. Peppermint oil also has potency against both Gram positive and Gram negative bacteria (Alankar, 2009; G. Bupesh et al., 2007), and
its combination with cajuput oil can prevent *Candida albicans* growth and formation of *Streptococcus* mutant’s biofilm.

Even though cajuput oil has been used as traditional medication, its application as dental caries prevention is still limited. Previous invention had applied cajuput oil into hard candy; however hard candy can be assumed having low contact time with teeth. Changing candy form from hard candy into soft candy was expected to maximize its potency as oral care product.

Non-sucrose *Cajuputs* soft candy is a chewy candy with cajuput oil (0.25 – 1%) and peppermint oil (0.25 – 5%) as basis, which does not use sucrose in its formulation but uses alternative sweeteners. *Cajuputs* soft candy can be made by using alternative sweeteners as its main ingredients which are isomalt, maltitol and sucralose. According to Mitchell (2006), isomalt, maltitol and sucralose do not promote tooth decay since it is not fermentable and prevents the growth of *Streptococcus* bacteria. Therefore the utilization of those three alternative sweeteners are suitable for maximize the ability of *Cajuputs* as oral care.

*Cajuputs* strong flavor, however, seems to be unaccepted by children. Children usually reject food which is not familiar with them and adding familiar fruit flavor was expected to increase acceptance level (Cooke and Jane, 2005). Sweet note flavor which might be suitable to be mixed with cajuput flavor and also familiar towards children (Hui *et al.*, 2010) which was more favorable compared to acidic flavor (Christie, 2011). Honeydew and banana flavor were the two highest accepted flavors in previous study (Christie 2011; Tanadi, 2013). This experiment used children as its target; therefore this experiment applied five fruit
flavors with sweet note characteristics (honeydew, banana, mango, guava and apple).

1.2 Research Problem

_Cajuputs_ hard candy had been studied for its potency as throat reliever and prevents dental caries formation (Wijaya et al., 2011; Wijaya et al., 2014). It was assumed changing _Cajuputs_ form from hard candy into soft candy could increase its potency; however the basic formulation of _Cajuputs_ soft candy has not been found. In order to be accepted by children, _Cajuputs_ soft candy should have favorable flavor. This research focused in obtaining the best fruits flavor combination in _Cajuputs_ soft candy and developing formulation which is accepted by children using Response Surface Methodology.

1.3 Objective

1.3.1 General Objective

General objective of this research was to assess children acceptance level towards non-sucrose _Cajuputs_ soft candy.

1.3.2 Specific Objective

The specific objectives in this research were:

1. To obtain preferred concentration of gum arabic and maltodextrin in non-sucrose _Cajuputs_ soft candy formulation.

2. To obtain formulation of non-sucrose _Cajuputs_ soft candy with combination of fruits flavor accepted by children.