

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the study

Toothpastes are functioning to clean, remove plaque, prevent cavities, and whiten teeth (Katz, 2012). It contains many compositions which is abrasive, solvent, humectants, surfactant, binder, flavour, artificial sweetener and also active ingredient (colgate palmolive australia, 2006). Previous studies have shown that the uses of antimicrobial toothpastes can control dental plaque and teeth problem (Okpalugo *et. al.*, 2009). Therefore, in order to make toothpaste become natural toothpaste, stingless bee honeys were used. This is due to the stingless bee honey has an excellence potential against dental plaque development and gingivitis due the effect of antimicrobial (Stefan Bogdanov, 2015). The use of honey in toothpaste because honey is highly stable against microbial growth and the toothpaste is used as a medium to study the stability of honey. Hence, to obtain best consistency of the toothpaste that suits the needs of the consumers, the pH, concentration, hardness and physiochemical parameters is studied.

#### 1.2 Motivation

Tooth decay or as known as cavities are one of the most common chronic situations of people around the world for specific is childhood life. Untreated tooth decay will give a bad effect such as pain and infections that may lead to problems with eating, speaking, playing, and learning process in life especially for children. Almost a third of five-year-olds are suffering from tooth decay and oral health problem (Catherine Wrigley, 2015). In Malaysia, the percentage of children who suffer from tooth decay is very high, which is about 70 percent (Utusan online, 2015). Therefore, the potential solution is to create a formula of toothpaste that will attract children attention to use it and provide more pleasing taste.

Therefore, nowadays not all toothpaste available in market was safe to be use. It is because of many chemical used to produce toothpaste were dangerous and toxic to human

being. For example is sodium lauryl sulphate (SLS). Sodium lauryl sulphate was use in toothpaste as a surfactant that acts as foaming agent. Surfactants are compounds that lower the surface tension between two liquids or between a liquid and a solid. In other hand, Sodium lauryl sulphate (SLS) may worsen skin problems in individuals with chronic skin hypersensitivity, with some people being affected more than others (Agner T, 1991; Nassif A, Chan SC, Storrs FJ, Hanifin JM, November 1994; Löffler H, Effendy I, May 1999). SLS appears to cause skin and eye irritation when tested in animal (NICNAS). A preliminary study suggested SLS in toothpaste caused the recurrence of aphthous ulcers, commonly referred to in some countries as canker sores or white sores (Herlofson BB, Barkvoll P, October 1994).

Furthermore, fluoride those were use in toothpaste also known as a hazardous chemical especially for human if it takes more than dosage needed. Fluoride that contains in toothpaste can do harm that lead to flourosis. According to Tony Lees from Herefordshire, a dentist for 40 years, "Dental fluorosis is not just a cosmetic problem, but the visible sign of chronic fluoride poisoning, and children are more vulnerable than adults". He also says that in the scale of toxicity, fluorides fall between arsenic and lead. The meaning of dental fluorosis is a condition caused by over-exposure to fluoride that can cause crumbling of the enamel and permanent damage to teeth (Simon Crompton, 2001). As a result, in order to overcome the problem a formula of toothpaste which is more natural and safer is created by using stingless bee honey.

### **1.3 Problem statement**

Some toothpaste that available in market had high quality of cleaning agent. However, some of the toothpaste still lacks in safety data regarding the actual danger that were toxic to human especially the chemical material used. Function of toothpaste is to cleaning the teeth, removal of unsightly enamel stains and promoting fresher teeth (John W. Stamm, 2007). Natural toothpaste from stingless bee honey is safer for human body compared to the fluoride toothpaste. This research was conducted to explore the characterization and stability of stingless bee honey. The stingless bee honey has been chosen because of their potential source of antioxidant agent and gives benefits to teeth. Besides that, it is because this honey is not very common in our community. Moreover, antioxidants in this honey are very useful for human health.

## **1.4 Objectives**

Based on the problem statement described in the previous section, therefore the objective of this research are:

- To measure the stability of stingless bee honey for toothpaste production.

## **1.5 Scopes of study**

In order to achieve the above mentioned objective, the following scope has been drawn:

- Determine the characterization of stingless bee honey.
- Formulation of toothpaste with stingless bee honey.
- Stability study of pH, concentration, hardness and physiochemical.