CHAPTER I

INTRODUCTION

1.1 Background

Indonesia has many potentials of herbal plants. Indonesian has used herbal plants as medicine for a long time. One of the them is Java tea (*Orthosiphon aristaus*). Java tea based functional drink was first formulated and studied by Herold (2007). The further studies have been conducted to optimize the formula. Java tea has been applied as functional drink due to the high amount of lipophilic flavonoid compound that act as antoxidant (Dzulkarnain *et al.*, 1999). Another health benefit is as antihyperglycemic agent. Wijaya *et al* (2007) utilized java tea into java tea based functional drink. To increase antihyperglycemic, antioxidant activity, and sensory acceptance, extracts of some herbs and spices are added, which are sappan wood, elephant ginger, javanese turmeric, lime, and kaffir lime.

The formulated java tea based functional drink which already existed, is in form of ready-to-drink. Method to increase its convenience and practicality is to create the product that can be consumed directly as a dietary supplement. The amount of product needed to be consumed to get the health benefit could be reduced by making Java tea-based functional drink in form of concentrate. To make concentrate from an extract, there are several steps that can be used, such as addition of hydrocolloid, addition of sweetener, and water removal through heating process. However since addition of sugar is avoided because java tea based functional possesses antihyperglycemic activity, and heating process also might reduce its

health benefit due to the degradation of compounds that contribute to give the health benefit, therefore in this research addition of hydrocolloid and intensifying the concentrated extract will be done.

Hydrocolloid is a high-fiber polymer compound that is used in food as thickening, gelling, emulsifying, stabilization and coating agent. By the addition of hydrocolloid, the basic property of food system, which is flow behavior (viscosity), is modified. The viscosity affects the mouthfeel of a product as well as its sensory acceptance. By modifying the viscosity with the optimum concentration of hydrocolloid, the improvement in sensory properties is expected, hence it is used as significant food additives to perform specific purposes (Milani and Gisoo, 2012).

Since the concentrate is developed form of the java tea-based functional drink, the value of doubling up the formulation has not been established yet, thus there is a need to obtain optimum formulation of the concentrate in terms of its suspension stability and sensory quality. Formula optimization will be done by using Response Surface Methodology (RSM), which is a collection of mathematical and statistical techniques that helps in obtaining the optimum responses from several variables (Bradley, 2007).

1.2 Research Problem

Java tea based functional drink is diversified into a concentrate ready-to-drink product. The addition of hydrocolloid and intensifying the mixed phytochemical and citrus extracts could be the alternatives to form drink concentrate. However, type and amount of hydrocolloid affect the characteristics of

the concentrate formed. Therefore, there is a need to obtain suitable type and amount of hydrocolloid to produce good concentrate quality. In addition, since concentrate is a novel product, the optimum proportion of the ingredients, such as mixed phytochemical extract and mixed citrus extract, and the sweetener, needs to be optimized so that the product has optimum suspension stability and sensory quality just as in the ready to drink form.

1.3 Objectives

1.3.1 General Objective

The general objective of this research was to obtain concentrate derived from java tea-based functional drink that is favorable in suspension stability and sensory quality.

1.3.2 Specific Objectives

The specific objectives of this research were:

1. To obtain the suitable type and concentration of hydrocolloid to make concentrate derived from java tea based functional drink.
2. To obtain optimized concentration of selected hydrocolloid, concentration of mixed phytochemical extract and mixed citrus extract, and sweetener to produce the concentrate derived from java tea based functional drink that has optimal suspension stability and sensory quality.