1.1 Background

*Muntingia calabura* L., the sole species to the genus *Muntingia*, is a flowering plant, which is native to southern Mexico, the Caribbean, Central America, Peru, Bolivia, and India. Its common English names include Jamaica cherry and Panama berry. The plant is widely distributed around the world, and is also found in tropical countries such as Malaysia, Thailand, Taiwan and Indonesia. It is known to be rich in bioactive compounds such as flavonoids, flavones and flavanones (Chen et al., 2004).

The various parts of the *M. calabura* L. plant have been documented for several medicinal uses. In traditional medicine, flowers are known to possess antiseptic and antispasmodic properties, and can be used as an antiseptic and treat abdominal cramps. The leaf infusion can be drunk as tea-like beverage, which can be used for the treatment of cold and headache. Studies have shown that the leaves also possess antinociceptive (pain reducing) and antipyretic (fever reducing) activity (Zakaria et al., 2007). The fruits are widely eaten by children as it is sweet and also cooked in tarts and made into jam (Aruna et al., 2013). The fruits can also be used as a carbon source for glutamic acid production (Vijayalakshmi and Sarvamangala, 2011).

In Indonesia, the plant is locally known as “*Talok*” or “*Kersen*” and exists as a common ornamental and roadside plant which, as for now, has not been
cultivated for mass commercial use. The plant is underutilized and its applications in the Indonesian food and pharmaceutical industry is very low to almost none.

Although this plant has been used widely, there’s been only few research which purpose are to identify the phytochemical constituents and functional properties of various parts of the *Muntingia calabura* L. plant. Different parts of the plant might possess different components which contribute into its highly medicinal properties. Therefore in this research, various parts of the tree (leaves, stem bark, flowers) were extracted using various solvent systems and extraction methods in order to analyze the phytochemical component of the *Muntingia calabura* L. plant. It is hoped that through this research, it could be utilized as a new source of natural antioxidants and health-promoting agent in the future.

1.2 Research Problem

Although “Talok” (*Muntingia calabura* L.) has been used widely as traditional medicine, there is still very few research that has been done to identify the functional component contained in the plant parts. The functional compounds are usually spread out in various parts of the tree. Therefore, the application of different extraction methods and solvent systems toward the different parts of the plant might give a wide perspective on the chemical constituents of this medicinal plant.

1.3 Objectives

1.3.1 General Objectives

The objectives of the research were to extract, analyze, and study the phytochemical constituents and functional properties of the stem bark, leaves, and flowers of *Muntingia calabura* L.
1.3.2 Specific Objectives

1. To extract the phytochemicals constituents from the stem bark, leaves, and flowers of “Talok” (*Muntingia calabura* L.) with three different solvents and two extraction methods.

2. To conduct a qualitative analysis on the phytochemical constituents of the stem bark, leaves, and flower extracts of “Talok” (*Muntingia calabura* L.)

3. To conduct a quantitative analysis on the total phenolic content, antioxidant activity, antidiabetic activity of the stem bark, leaves and flower extracts of “Talok” (*Muntingia calabura* L.)