

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Research

The total plant species in Indonesia's tropical forests are around 30,000 to 40,000 plant species (LIPI, 2014). If used optimally, it will have a positive impact on increasing farmer income and increasing labour in agriculture and processing business (Hermanto, 2007). The thing that is still an obstacle for this development is natural resources that are still not optimally utilised for the benefit of the community (Johnhref, 2007).

Kersen (*Muntingia calabura* L.) is one example (Ananda et al. 2012). Kersen is a tropical fruit plant, often found on the roadside, growing in the middle of a housing gap, on the edge of a drainage canal and places that are not conducive to life because it has good adaptability (Mintowati et al. 2013). Allah has created fruits as the gift for humans, one of which is kersen as a plant that grows a lot, quickly adapts to the environment, and can increase with rainwater even slightly this is related to the verse *Al-Qur'an Qs. Al-Baqarah* verse 22 that sounds:

الَّذِي جَعَلَ لَكُمُ الْأَرْضَ فِرْشًا وَالسَّمَاءَ بِنَاءً وَأَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجَ بِهِ مِنَ الثَّمَرَاتِ رِزْقًا لَكُمْ فَلَا تَجْعَلُوا لِلَّهِ أُنْدَادًا وَأَنْتُمْ تَعْلَمُونَ ٢٢

*Who made the earth a resting place for you and the heaven a canopy and (Who) sends down rain from the cloud then brings forth with it subsistence for you of the fruits; therefore do not set up rivals to Allah while you know.*

According to Siddiqua et al. (2010), the utilisation of kersen has been carried out by a small portion of the community. Fruit from Kersen can be consumed fresh or often cooked and made jam. Kersen has anti-inflammatory effects (Sarimanah et al. 2015), anti-diabetes (Verdayanti, 2009), can reduce blood sugar levels (Pramono et al. 2014), has antioxidant

activity (Zakaria et al., 2011), contains flavonoids and contains low levels of purine (Meiliza, 2013), A study by Sudargo et al (2017), Kersen juice can significantly increase high density lipoprotein (HDL).

Research conducted by Sarimanah et al. (2015) using kersen with a dose of 50 and 100 mg/kg showed that there was an anti-inflammatory effect in white *wistar* rats fed with unripe fruits and leaves from kersen. Kersen is also one of the plants that are thought to have active substances as anti-diabetes, namely ascorbic acid, fibre, niacin and  $\beta$ -carotene (Verdayanti, 2009). Based on the study of the giving kersen extract 100 mg/kg BB significantly reduced blood sugar levels ( $P < 0.05$ ) (Pramono et al. 2014). Research conducted on 20 male rats showed that giving kersen juice affected the reduction of blood uric acid levels in mice (*Mus musculus*) (Meiliza, 2013). Kersen juice could increase HDL to 2.68 mg dL but do not significantly change total cholesterol (Sudargo et al., 2017). Kersen also contains flavonoids, tannins, triterpenes, saponins, polyphenols that has showed antioxidant activity (Zakaria et al., 2011). A panellist sensory test of kersen processing is also one of the potentials for development of kersen. As many as 70% of panellists stated that they liked the kersen jam (Laswati et al., 2017).

Another fruit that is useful and can grow at barren is a date (*Phoenix dactylifera*) which is including the family of palm, have various kinds of nutrients and can be used as medicine. Dates are foods that contain high energy with an ideal composition, which have fat reserves of tryptophan, omega-3, vitamin C, vitamins B6,  $Ca^{2+}$ , Zn, and Mg. Dried dates containing the highest phenol are Deglet Noor, which is 661 mg / 100 g of dates weight (Al-farsi and Lee, 2008). Date palm fruit contains very high fibre besides it also contains potassium, manganese, phosphorus, iron, sulphur, calcium and magnesium which are very good for consumption. Iron content can increase haemoglobin levels in the body. So it is highly recommended for women of reproductive age and pregnant women (Gibney et al.2009). Date palm juice can affect the increasing of haemoglobin levels (Hb) 3,59gr / dl (Nugroho et al.2017).

Research conducted by Susilowati and Syani (2017) there was the influence of the giving of the fruit of the date palm in pregnant women against the increase in the levels of haemoglobin with an average rise of 1.1% haemoglobin levels with the significant value of 0.001. The command of Allah reinforced this research ordered Maryam to take and eat date palm nearby before giving birth to Isa. this is related to the verse *Al-Qur'an Qs. Maryam* verse 25 that sounds

وَهَزِيْٓ اِلَيْكَ بِجِدْعِ النَّخْلَةِ تُسْقِطُ عَلَیْكَ رُطْبًا جَنِيًّا ۙ ۲۵

*And shake towards you the trunk of the palm tree, it will drop on you fresh ripe dates.*

The combination of fruit that can use as a functional food is very developed nowadays. One of them is the addition of Kersen and *Michelia champacca* into the diet increase the antioxidant content and has the potential to become a natural antioxidant (Vijayanand and Thomas, 2016). Then the measurement of bioactive compounds is needed in this study. Seeing the potential of proteins that contain antioxidants and macronutrients, it is necessary to develop kersen and dates which can be one of the functional foods that can be consumed directly, by looking at the level of macronutrients, bioactive compounds, and organoleptic properties. So that it can be one of the functional foods for the community and proven benefits.

## 1.2 Formulation of the Problem

The formulation of problem in the research, is there differences of analysis proximate, antioxidant, and organoleptic of kersen and date jelly mix with variation composition?

## 1.3 Objectives of Research

### 1.3.1. General Purpose

The general purpose of this research to analysis differences of proximate, antioxidant, and organoleptic variation jelly mix.

### **1.3.2. Special Purpose**

The special purposes of this research are to :

- a. Identify nutritional component of jelly mix with variation composition.
- b. Identify the difference proximate and antioxidant of kersen and date jelly mix with variation composition.
- c. Identify the difference of hedonic test kersen and date jelly mix with variation composition.
- d. Analyse the difference organoleptic of kersen and date jelly mix with variation composition.

## **1.4. Benefits of Research**

### **1.4.1. Theoretical Significance**

The theoretical advantages of this research are as a reference for further research that carried out by researchers or students.

### **1.4.2. Practical Significance**

The practical benefits of this research are expected to be able to provide information about proximate, antioxidant, and organoleptic of kersen and date jelly mix with variation composition. Then it can be a nutrient-rich functional food.

## 1.5 The Authenticity of the Research

**Table 1. Authenticity of the Research**

<b>Name/ Title /And Years Of Research</b>	<b>Method</b>	<b>The Results</b>	<b>Difference of this research</b>
Pramono et al./ influence of kersen fruit Extract ( <i>Muntingia calabura l.</i> ) against the blood sugar levels of white Rat ( <i>Rattus novergicus</i> ) induced <i>Streptozotocin</i> (STZ)/2014	Repeated Analysis of Variance (Repeated ANOVA), extracted by maceration method namely 70% ethanol mixture / White Rat subject	Break-out group by as much as five groups, group 3 coded kersen fruit extract 100 mg/kg showed a drop in blood sugar levels significantly, kersen fruit extract as much as 100 mg/ kg as potentially ant diabetic	The study had performed using a mixture of kersen and dates. It not tested on animal objects. The research use humans as panellists for organoleptic testing.
Singh et al./ Phytochemical Analysis of <i>Muntingia calabura</i> Extracts Possessing Anti- Microbial and Anti- Fouling Activities/2017	Tests of flavonoids using the 5 ml ammonia and a few drops of sulphuric acid, colouring yellow with indications of positive results/ subject of kersen fruit	kersen fruit have a value in the maximum reduction in the quantity of sugar, tannins, and these Terpenoids. But the levels of antioxidant activity and low protein levels	The research had carried out using a mixture of dates and analysing nutrient content, bioactive compounds, and organoleptic properties.

Laswati et al./ Kersen Utilization ( <i>Muntingia calabura l.</i> ) As an alternative to processed food products: chemical properties and remote/2017	Experimental design of Randomized Design Methods Group (RDMG) consists of 3 treat, each treatment repetition done 3times/Kersen	70% of the panellists expressed love towards jam kersen fruit. Analysed the chemical composition of macro includes fresh ingredients to know the conditions of the early material or nutrient content.	The research that had carried out to tast for variations in the proportion of different materials, and proximate test analysis, flavonoids, phenols, and organoleptic tests jelly mix kersen and date.
Vijayanand and Thomas and Thomas,/ Screening of <i>Michelia champacca</i> and <i>Muntingia calabura</i> (kersen) extracts for potential Bioactive/2016	Folins Ciocalteau for the determined total phenolic/ subject of <i>Michelia champacca</i> and kersen	There was a positive relationship found total phenol and antioxidant activity	The research that had carried out has an additional kersen and dates jelly mixture with variation proportion. The jelly has analysing proximate test analysis, flavonoids, phenols, and organoleptic tests jelly mix kersen and date.

Compared with the study above, the research that had carried out has an additional food mixture, namely dates. Tests for variations in the proportion of different materials, and proximate test analysis, flavonoids, phenols, and organoleptic tests jelly mix kersen and date.