

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Ingredients Review

##### 2.1.1 *Orthosiphon aristatus*

The kumis kucing plant has the Latin name *Orthosiphon aristatus*. In some areas this plant is known by several local names, namely Kutum, mamam, spider flower, remuk jung, remujung, kumis kucing, songot koceng. The classification of the kumis kucing plant is as follows (Ministry of Health, 2020; USDA, 2019).

Division: Spermatophyta

Class : Dicotyledonae

Nation: Tubiflorae

Tribe: Labiatae / Lamiaceae

Surname: *Orthosiphon*

Type : *Orthosiphon stamineus* Benth.

The kumis kucing plant is 0.3-1.5 m tall and has a 4-angle stem. The leaves are simple, 2-4 cm wide and 4-7 cm long. The flowers are white, blue or purple. When the flower opens, the stamens and pistil extend far beyond the petals, which look like "kumis kucing". *Kumis kucing* plants are found in tropical countries such as Asia and Australia. Cultivation of this plant can be done on plains with an altitude of 500-1200 meters above sea level with rainfall of more than 3000 mm/year. Soil conditions that are fertile and loose with a pH of 5-7.7, contain lots of humus, have good water flow and are exposed to direct sunlight are suitable habitats for the cultivation of

this plant. (Herliana, 2019).

The kumis kucing plant contains polymethoxylated flavonoid compounds, phenylpropanoids (caffeic acid derivatives), and terpenoids (especially diterpenes and triterpenes). The most prominent flavonoids isolated from the leaf extract of the kumis kucing are sinensetin, eupatorin, 3'-hydroxy-5,6,7,4'- tetramethoxy flavones, 20–23 tetramethylcutellarein, 20 salvegenin, ladanein, vomifoliol, 7,3' ,4'-tri-O-methyluteolin, and scutellarein tetramethylether. (Ameer et.al 2020) Sinensitin is a compound in the flavonoid group which is the most important phytochemical compound and a marker compound from the kumis kucing plant. (Himani et al., 2021).

Kumis kucing leaves in Indonesia have been used for diuretics, preventing and treating rheumatism, diabetes mellitus, hypertension, tonsillitis, epilepsy, menstrual disorders, gonorrhoea, syphilis, kidney stones, gallstones, acute and chronic nephritis, gout arthritis, and antipyretics (Adnyana et al., 2021). The kumis kucing plant is a herbal medicine that is widely used empirically and is believed to have a diuretic effect. Several countries believe and use this plant to treat various diseases such as hypertension, atherosclerosis, kidney inflammation, fever, influenza, hepatitis, diabetes, etc. (Achmad et al, 2019) Some of the properties of the kumis kucing plant are: as an antioxidant because it has antioxidant activity which is high and has hepatoprotective activity because it can reduce bilirubin levels in rats affected by jaundice. Kumis kucing leaf extract also functions as a diuretic which is useful in the treatment of kidney stones, flushing the kidneys and urinary tract.

As an anti-inflammatory that can be used for the treatment of arthritis and rheumatism. In addition, kumis kucing leaves also have strong hemolytic properties that can reduce high blood pressure and reduce cholesterol. (Himani et al., 2020). The kumis kucing plant shows antioxidant, antitumor, diuretic, antidiabetic, antihypertensive, anti-inflammatory, antibacterial, and hepatoprotective activities (Adnyana et al. 2019).

## **2.2 Product Review**

### **2.2.1 Jelly**

Jelly confectionery is known as confectionery , which is a solid food product consisting of sugar as the main component (Sudaryati, et al., 2019). Jelly is made from water or fruit juice which has a clear, transparent appearance and has a texture with a certain elasticity (Fitrina, 2019). According to Lesmana (2021), the advantage of jelly compared to other types of is that its cohesive power is higher than its adhesive power so that the candy does not stick to the teeth.

Jelly belongs to the semi-wet food product group, where jelly has an elastic, soft texture, is consumed directly, processed in more than one treatment, and is also stable for several months without heat treatment, cooling or freezing, but by making arrangements on the formula used includes active compounds, pH, and most importantly AW which reaches 0.6-0.85 (measured at 250C) (Muchtadi, 2021). According to Standart Nasional Indonesia 3547-2-2008, jelly is a candy with a soft texture, which is processed by adding hydrocolloid components such as agar, gum, pectin, starch, carrageenan, gelatin,

and others which are used for texture modification so as to produce a chewy product. Jelly must be printed and aged before being packaged.

Jelly is a product composed of sugar as the main component or a mixture of sugar and other sweeteners and mixed with hydrocolloid components such as agar, gum, gelatin, starch, agar, and carrageenan (Nurismanto, et al., 2021). Jelly as a semi-moist food has a shelf life of 6-8 months when placed in a jar & 1 year if the packaging has not been opened (Miranti, 2020). Jelly has a tendency to become sticky due to the hygroscopic nature of the reducing sugars that form , so it needs to be added as a coating material (Miranti, 2020). Jelly generally requires a coating material in the form of a mixture of tapioca flour and sugar powder. This coating is useful for making the candies not stick to each other and also for adding sweetness (Rahmi, et al., 2019).