COMPARISON OF REFLUX AND MACERATION METHODS ON TOTALFLAVONOID CONTENT FROM SONGGA LEAF EXTRACT

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Abstract

Background: The songga plant is one of the plants belonging to the longganiacea family and empirically the people of Bima Dompu, West Nusa Tenggara use songga, including leaves, wood and roots. Songga leaves contain Alkaloid, Flavonoid, Saponin and Tannin compounds. **Objectives**: The aim of this research was to determine the comparison of extraction methods between maceration and reflux and determine the total flavonoid content of songga *(stryhnous ligustrina*) leaf extract. **Method:** The design of this research was experimental using a comparative method by comparing two extraction methods, namely macereation and reflux, on total flavonoid levels. **Results:** of research on total flavonoid levels from songga leaf extract using the reflux method (32.14028mgEK/g). higher compared to the maceration method (29.5755mgE/g). It was concluded that the reflux method was higher than the maceration method.

Keywords*: Flavoniods. S; Maceration; Reflux; Songga leave*

BACKGROUND

The songga plant is one of the plants belonging to the longganiacea family and empirically the people of bima dompu, west nusa tenggara use songga, including leaves, wood and roots. Songga leaves contain Alkaloid, Flavonoid, Saponin and Tannin compounds (Megawati et al, 2023).

Flavonoids are secondary metabolites which belong to the group of phenolic compounds with the structure of benzene replaced by an OH group. This compound is the largest found naturally and is found in roots, wood, bark, leaves, stems, fruit and flowers. In general, flavonoid compounds are foundin higher plants, around 5 to 10% of secondary metabolites in plants are flavonoids. Flavonoids are responsible for creating color and flavor in seeds, flowers, fruit and aroma. This compound is easily oxidized at high temperatures and is not heat resistant (Susila Ningsih et al., 2023)

Measurement of the total flavonoid content of the extract was calculated using UV-vis spectrophotometry at the maximum wavelength with a ratio of quercetin. The aim of this research was to determine the comparison of reflux and maceration methods on the total flavonoid content of songga leaf extractThis research uses a comparison of reflux and MS maceration methods Then continued testing to determine total flavonoid levels using UV-vis spectrophotometry. The aim of this research is to see which method is higher in testing (*Strychnos ligustrina)*

METHODS

This research was carried out in the phytochemical laboratory and instrument analysis laboratory, Bachelor of Pharmacy, Megarezky University.

From the research, total flavonoid content was measured in songga (Strychnos Ligustrina) leaf extract with a wavelength of 433. The total flavonoid content was determined using a linear regression equation with the Microsoft Excel program and a standard curve of quercetin as absorbance (y) and quercetin concentration in per million (x). Total flavonoid concentration was calculated using the following formula.

$$KTF = \frac{V(mL) \times X(mg/mL) \times FP(mg/mL)}{\text{Sample weight ((g)}}$$

Information:

KTF = total flavonoids content (mg EQ/g extract)
X = Flavonoid concentration in the sample
(mg/mL)FP = Dilution factor (mL)
V = Volume (mL)

RESULTS AND DISCUSSION

Table 1. Songga leaf extract soak (*Strychnos Ligustrina*)

Sample	Solvent	Extraction method	Dry sample weight	Extract weight	Rendamen (%)
Songga leaves	Ethanol 96%	Reflux	300 grams	28,45 grams	9,48%
		Maceration	300 grams	23,35 grams	7,78%

Chart 1. standard curve

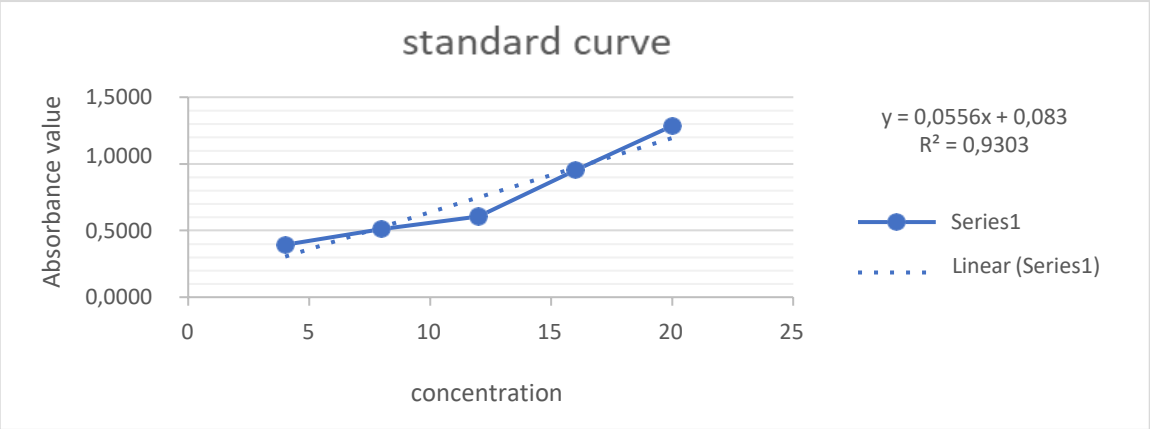

Table 2. Total flavonoid content of ethanol extract of songga leaves (*Strychnos Ligustrina*)

Method	Absorbance	Average	Total flavonoid levels
	1,864		
Reflux	1,8699	1,8700	32,14028
	1,8762		
	1,7186		
Maceration	1,7318	1,7274	29,5755
	1,7318		

Quantitative tests were carried out to determine the total flavonoid content. The test begins by preparing a standard solution of quercetin at various concentrations. Quercetin is used as a standard because it is a flavonoid from the flavonol group with a keto group on the C-4 atom and a hydroxyl group on the adjacent C-3 and C-5 atoms. The total flavonoid content in the ethanol extract of songa was analyzed using a UV-visible spectrophotometer and obtained 32.14028 mgEQ/g for the refluxed extract and 29.5755 mgEQ/g for the macerated sample.

The analysis results showed that the total flavonoid content in the extract from reflux was higher than that from maceration. This is thought to be due to the heating process using the reflux method. This increases the solvent's ability to extract compounds that are insoluble at room temperature, thereby maximizing compound extraction. According to ad-Dawaa, extraction results are influenced by several factors, including solvent type, solvent concentration, particle size, temperature, pH and extraction time.

The two methods of reflux and maceration were chosen in this study to compare the total flavonoid levels of the extracts resulting from reflux and maceration. Measurement of total flavonoid levels in songga (Strychnos ligustrina) leaf extract with a wavelength of 433 nm. Flavonoids are calculated using a linear regression equation from the previously measured quercetin calibration curve. The maximum wavelength is the wavelength emitted by a substance at maximum absorption.

Determination of total flavonoid levels was carried out using a standard solution of quarcetin 4 ppm, 8 ppm, 12 ppm, 16 ppm, 20 ppm. Absorbance measurements were carried out using UV-Vis spectrophotometry with a wavelength of 433 nm. 4 ppm absorbance value (0.3941), 8 ppm absorbance value (0.5117), 12 ppm absorbance value (0.6073), 16 ppm absorbance value (0.9535), 20 ppm absorbance value (1.2855).

Flavonoid content was determined by adding 2% aluminum chloride (AlCl3). Aluminum chloride (AlCl3 2%) is intended to achieve a bathochromic effect, namely a shift to a higher wavelength, bringing the wavelength of the standard solution to the UV-visible wavelength range, namely 400-800 nm. The bathochromic effect produces darker colors. The next process consists of adding 1 ml of sodium acetate. To stabilize the reaction, use sodium acetate as a reaction stabilizer, and add distilled water and leave for 30 minutes to ensure that the reaction between the standard solution and the added reagent goes well. The principle of this method is that AlCl3 forms a stable complex with the C-4 keto group and then with the C-3 or C-5 hydroxyl group of flavones and flavonols. The addition of aluminum chloride forms a stable acid complex with the ortho-hydroxyl group on the A or B ring of the flavonoid.

CONCLUSION

96% ethanol extract of songga leaves (Strycnhnos Ligustrina) using the reflux method 32.14028 mgEQ/g and the maceration method 29.5755 mgEQ/g. The results of the research can be concluded that the total flavonoid content using the reflux method is higher than that using the maceration method.

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