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Phytochemical Analysis of Flavonoids and Tannins from Ethanol Extract of Keji Beling (Strobilanthes crispus) Using UV-Vis Spectrophotometry Method

Ayu Safitri[1 *], Panji Wahlanto[1]

1. *STIKes Muhammadiyah Ciamis, Indonesia.*

Correspondance: Ayu Safitri

Email: *safitiayu9954@gmail.com*

Address : Jl. K.H. Ahmad Dahlan No.20, Ciamis, Kec. Ciamis, Kabupaten Ciamis, Jawa Barat

ABSTRACT

Keji Beling (Strobilanthes crispus BI.) is a plant that has been used by the community as a traditional medicine for kidney stones, diabetes mellitus, ulcers and as a laxative. Keji beling contains many beneficial substances such as flafonoids and tannins. This research aims to determine the content of flavonoid and tannin phytochemical compounds and to determine length Maximum waves in flavonoid and tannin compounds in keji beling leaf extract (Strobilanthes crispus BI.). Keji beling leaves were extracted using the maceration method with 70% ethanol solvent. Secondary metabolite content was identified qualitatively using a phytochemical screening test. Flavonoids were tested with concentrated MgSO4 and HCl reagents and tannins were tested with FeCl3 reagent. Qualitative analysis using the UV-Vis Spectrophotometry method. Results Research shows that the phytochemical screening test on keji beling leaf extract (Strobilanthes crispus BI.) is positive for containing flavonoids and tannins, indicated by a color change in the phytochemical screening test. Qualitative analysis results appear at a maximum wavelength (λ_{max}) of 465 nm for flavonoids, and for tannin compounds at a maximum wavelength (λ_{max}) of 765 nm.

Keywords : Keji beling, flavonoid, tannin, spectrophotometry uv-vis.

INTRODUCTION

Strobilanthes crispa Blume is a plant known by the name known as the vile shard. Keji shard is used in traditional medicine to treat diabetes (Supervisory Agency epublic of Indonesia Medicine and Food, 2011). Based on research that has been done, leaves vile shard known to inhibit formation kidney stones (Regulation of the Minister of Health Republic of Indonesia, 2014; Dharma et al., 2014), antidiabetic (Nurhidayah et al., 2015), anticancer (Rahmat et al., 2006) and improve the immune system (Setyawan et al., 2016). In clinical trials, vile shard leaves efficacious for lowering blood pressure high (Gunawan, 2011).

Plants can contain many chemical compounds that are useful in the field of medicine (Kurnia Ramdan, et al 2022). Research on determining the levels of secondary metabolites contained in keji beling leaf extract has been carried out using the extraction method used, namely maceration with hexane, acetone and ethanol solvents, while the solvent was water. the infusion method was used. The results obtained from phytochemical screening and assay showed Keji Beling leaf acetone extract contains 1.026% phenol, 0.711% tannin and 0.721% alkaloid. Ethanol extract Keji shard leaves contain 0.773% phenol, 1.319% tannin, 1.333% flavonoids and 0.643% alkaloids. Extract keji beling leaf water contains 0.425% phenol and 0.956% flavonoids. Meanwhile, keji leaf hexane extract Glass does not contain the secondary metabolite compounds (Harizul Rivai et al, 2019).

Another benefit of keji beling leaves is that they have antimicrobial activity against Candida albicans, Microsporum gypseum, Bacillus cereus, and Shigella dysentriae using the disc diffusion method. The antioxidant activity test of the ethanol extract of keji beling leaves was carried out using the DPPH method (Rumondang Bulan et al), 2019.

TOOLS AND MATERIALS

The tools used in this research were 200 ml, 500 ml, 1000 ml beakers, analytical scales, stirring rods, steam cups, blenders, test tubes, measuring cups, water baths, rotary evaporators, volumetric flask, thermometer, UV-Vis spectrophotometry. Meanwhile, the ingredients used are keji beling leaf extract, 70% ethanol, HCl solution, MgSO4 powder, distilled water, FeCl3, quercetin, AlCl3, acetic acid, tannic acid, Na2CO3.

METHODS

This section of the report provides a detailed description of the materials and tools used along with the specifications of the materials and tools. and [systematic research procedures. procedures followed in completing the experiments discussed in the report. Such notes are essential, not only for the reader to have a clear understanding of the experiment, but a well-written Materials and Methods section to also serve as a set of instructions for anyone wishing to replicate the research in the future.

RESULTS

a. Extraction result of keji beling leaves

Table.1 Keji beling extract rendemen

Simlplicia	Solvent	Extract weight	% Rendemen
200 mg	Ethanol 70%	14 g	7%

b. Flavonid screening result

Table.2 Flavonoid screening result

Analyte	Reagent	Result	Confirmation
Flavonoids	$MgSO_4$ HCl	Red	Positive

c. Tannin screening result

Table.2 Tannin screening result

Analyte	Reagent	Result	Confirmation
Flavonoids	$FeCl_3$	Green black	Positive

d. Maximum wave length of flavonoid and tannin

Table.3 Flavonid and tannin maximum wave length

Analyte	Maximum wavelenth	Standards absorbance	Sample absorbance
Flavonoids	465 nm	0,017	0,026
Tannin	765 nm	0,560	0,563

DISCUSSION

From the yield calculation, the results obtained is 7%, this shows that the resulting yield value is not good, because according to the Indonesian Herbal Pharmacopoeia Edition 1 the requirement for a good yield for leaves is not less than 12.3%. The yield results obtained from keji beling leaf

extract can be seen in Table.1.

The results obtained from the flavonoid screening test, namely a red solution, showed positive presence of flavonoids in the keji beling leaf extract. These results are in line with research by Mariana et al. (2013) that in their research it was positive for the presence of flavonoids with the formation of a red color. Color changes can occur because the addition of magnesium sulfate powder and hydrochloric acid to the flavonoid test will cause the reduction of the existing flavonoid compounds, giving rise to a red reaction which is a characteristic of the presence of flavonoids.

The results of the tannin test obtained in the form of a blackish green solution indicate the presence of tannin in the keji beling leaf extract. These results are in line with research (Larasati and Putri 2021). that in their research it was positive for the presence of tannins with the formation of a blackish green color. The color change occurs when FeCl3 is added which reacts with one of the hydroxyl groups in the tannin compound, the reaction between tannin and FeCl3 can form a complex compound, the formation of a complex compound is due to the presence of the Fe3+ ion as the central atom and tannin has an O atom which has a lone pair of electrons that can coordinate to the central atom. The formation of complex compounds can cause a color change to blackish green which is a characteristic of tannin compounds.

The results obtained from determining the flavonoid wavelength, namely the maximum absorption value at a wavelength of 465 nm, is the wavelength (λmax) of flavonoid compounds. These results are in line with research by Diah Astika et al. (2019), the absorbance value obtained at a wavelength (λmax) of 465 nm for the keji beling leaf extract sample was below 0.2. If the absorbance value is very small (<0.2), it indicates that the concentration absorbed is very small. Likewise, when diluting it should not be too dilute, because if it is too dilute (low concentration) it can also produce an absorbance value below 0.2 because the concentration absorbed is very high.

The results obtained are that the maximum absorption value at a wavelength of 765 nm is the wavelength (λmax) of the tannin compound. The maximum absorption value is 0.5. This result is in line with research by Ebry Ryanata (2014), namely 765 nm. This indicates the presence of tannins in the sample

CONCLUSION

Based on the results of the research data, it can be concluded that the results of the qualitative test of flavonoid and tannin compounds by phytochemical screening on keji beling leaf extract (Strobilanthes crispus BI.) showed that it contained positive flavonoids and tannins. Qualitative tests using UV-Vis spectrophotometry on keji beling leaf extract (Strobilanthes crispus BI.) showed that the maximum wavelength (λmax) of flavonoid compounds was 465 nm and the wavelength (λmax) of tannin compounds was 765 nm.

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REFERENCES

Dharma, S., Aria, M., & Syukri, E. F. (2014). Effect of Keji Leaf Ethanol Extract Glass (Strobilanthes crispa (L) Blume) Regarding the Solubility of Calcium and Oxalate as a Component of Kidney Stones in the Urine of Male White Rats. SCIENTIA, 4(1), 34-37.

Gunawan, I. (2011). Vile shard effect (Sericocalyx crispus L) Against Decreased Blood Pressure in men Mature. Bandung: Faculty of Medicine Maranatha Christian University.

Harrizul rivai, Sestry Misfadhila. 2019. Analisis Kualittaif dan Kuantittaif dari Ekstrak Heksan, Aseton, Etanol dan Air dari Daun Keji Beling (*Strobilanthes crispus* Blume). Universitas Andalas. DOI: 10.13140/RG.2.2.20451.60963.

Ministry of Health of the Republic of Indonesia. (2014). Indonesian Pharmacopeia. (V Edition). Jakarta: Ministry of Health Republic of Indonesia.

Nurhidayah, K., Fadraersada, J., & Rijai, L. (2015). Potency of Keji Leaf Extract Glass (Strobilanthes crispus) As Lowering Blood Glucose Levels: Test In Vivo in White Rats (Rattus norvegicus). Seminar Proceedings National Pharmacy, 43-49.

Republican Food and Drug Administration Indonesia. (2011). Preparation Reference Herbal. Vol 6. Issue 1. Jakarta: Agency RI Food and Drug Inspector.

Rahmat, A., Edrini, S., Akim, A. M., Ismail, P., Yun Yin, T. Y., & Abu Bakar, M. F. (2006). Anticarcinogenic Properties of Strobilanthes crispus Extract and its Compounds in Vitro.

International Journal of Cancer Research, 2(1), 47-49.

Rahmah Siti, Kurnia Ramdan, Anna L Yusuf, and Agus Setiawan. 2022. “Isolasi Dan Identifikasi Kafein Dari Daun The Hijau, Tah Hitam Dan The Olong Menggunakan Spektrofotometri UV Vis.” *Pharmacy Genius* 01(01): 62–73.

Larasati, TA, and Meiwa Rizky Ardhi Bella Putri. 2021. “Uji Efektivitas Daun Keji Beling (Strobilanthes Crispus [Sinonim = Sericocalyx Crispus L]).” *JK Unila* 5: 16–24.

Rumondang Bulan, Firman Sebayang, Emma Zaidar Nasution, Putri Wulandari. 2019. Antimicrobial and Antioxidant Activity Test of Ethanol Extract of Keji Beling Leaves (*Strobilanthes crispus* Bl). Talenta Conference Series Science and Technology. 2(2). DOI:10.32734/st.v2i2.511

Setyawan, A. B., Winarto, & Lestari, E. S. (2016). Proof of Keji Leaf Extract Shards in Upgrading Systems Immune. Journal of Public Health, 11(2), 96-100.