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PHYTOCHEMICAL SCREENING AND IDENTIFICATION OF TERPENOIDS COMPOUNDS AT ETHANOLIC EXTRACT PEGAGAN LEAVES (*CENTELLA ASIATICA* L. URBAN)

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ABSTRACT

Terpenoids are one of the secondary metabolite compounds that have an important role in medicine because they have many benefits in healing various diseases. Terpenoids are also believed to be contained in gotu kolaleaves. This research was conducted to find out what are the active compounds contained in gotu kola leaves. This research begins with extracting 400 grams of gotu kola leaf powder with 96% ethanol solvent using the maceration method. The results of maceration were then evaporated using a waterbath until a thick extract was obtained. Identification of active compounds contained in gotu kola leaves was carried out by phytochemical screening test and KLT test on thick extract. In the phytochemical screening test, it is known that the ethanol extract ofgotu kola leaves positively contains terpenoids, steroids and saponins. Then the identification of compounds using the KLT method with ethanol:ethyl acetate eluent in a ratio of 9:1, 8:2, 7:3 and 6:4, then sprayed with reagent liquid and observed under a UV lamp with a wavelength of 254 nm. In the ratio of 9:1, the resulting Rf value is 0.64. Then in the ratio of 8:2 and 7:3, the resulting Rf values were 0.67 and 0.69. And in the ratioof 6:4, the resulting Rf value is 0.75. Based on the Rf value obtained, it can be concluded that the ethanol extract of gotu kola leaves can certainly contain terpenoid derivative compounds, namely triterpenoids which havea standard Rf value of 0,50-0,89.

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Introduction

Indonesia is a tropical country that has various types of topography and different climatic conditions. Indonesia's diverse natural conditions also have a high level of biodiversity. The high level of biodiversity makes Indonesia have various types of medicinal plants. In addition, Indonesia is also one of the largest medicinal plant users in the world together with other countriesin Asia such

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as China and India (Novianti T, Zainuri M, 2019). Indonesia has around 90,000 plant species, of which 9,600 are known to have medicinal properties and 300 species have been used as traditional medicinal ingredients by the traditional medicine industry (Larasati, A., Marmaini.,Kartika, 2019)

Plants are the source of medicines used in the treatment of various diseases. For generations, people have long recognized the function of plants as traditional medicine in an effort to overcome health problems. The tradition of using traditional medicine is passed down from one generation to another and has been going on for a long time. Starting from the results of community trials of plants around their place of life to meet the need for treatment. (Larasati, A., Marmaini., Kartika,2019).

Gotu kola leaves with the Latin name Centella asiatica L. Urban and belongs to the Apiaceae family. (Dzulfiqor, Y., Susilo, Akbar, 2016), This is one of the wild plants that are widely used astraditional medicine either in fresh, dried or in the form of concoctions. Besides being able to be processed into medicines, gotu kola leaves, which can be considered a wild plant, can also be processed into foods that can be beneficial for health. Gotu kola leaves grow in Asian countries such as China, Indonesia, Japan, and India. This plant is commonly found in plantations, fields, rice fields and roadsides. This wild plant is also known as horse foot leaf or antanan. Gotu kola is one of the medicinal plants that is widely known and easily found in Indonesia, but its use as a medicine is still limited. (Sutardi, 2016).

Secondary metabolites are metabolite compounds that are not essential for the growth of organisms and are found in unique forms or vary from one species to another. (Botahala, L., Sukarti, Arifuddin, A., Arif, A.R., Ischaidar, Arafah, M., Kartina, D., Armah, Z., Yasser, M., Pratama, I., Patarru, O., Santi, Hamsah, 2020). These secondary metabolites can be obtained from leaves, flowers, fruits, stems, roots or seeds.

Thin layer chromatography (CLT) is a solid liquid physicochemical separation method. The separating layer consists of a grainy material (stationary phase), placed on a support in the form ofa glass plate, metal, or suitable coating. The mixture to be separated in the form of a solution, bottled in the form of a spot. Then the plate is inserted in a tightly closed vessel containing a suitable developer solution (mobile phase). (Nofita, Feladita, N., Fantoro, 2020).

Materials and Methods

The materials used in this study were herbaceous gotu kola leaves (Centella asiatica L. Urban), 96% ethanol, distilled water, 2N HCl, mayer reagent, libermanbuchard reagent, bouchardart reagent, salkowski reagent, FeCl3 5%, ethyl acetate, H2SO4, and Mg powder.

This research was conducted in several stages, namely first the preparation of ethanol extract of Centella asiatica L. Urban leaves using maceration extraction method; then the determination of terpenoid compounds using KLT method.

Gotu kola leaves that have been collected, cleaned by washing with running water to remove dust, soil and other impurities, then the leaves are dried by aerating, after drying the samples of gotu kola leaves are mashed to make it easier to withdraw the content of the compounds contained in the sample during the extraction process.

The withdrawal of gotu kola leaf extract using the macerase method, which is a number of samples soaked with

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ethanol solvent for several days, with stirring, and changing the solvent if the solvent yield has been saturated, the maceration extraction process is stopped if the solvent used is clear, and the resulting extract is collected for further separation of solvents and extracts using a rotary evaporator.

The ethanol extract of gotu kola leaves was photographed on a GF254 KLT plate with a size of 10cm high and 3 cm wide using a capillary pipe 1 cm from the bottom edge of the KLT plate, then allowed to dry. The KLT plate was then placed in a chromatography vessel containing ethanol:ethyl acetate eluent in the ratio of 9:1, 8:2, 7:3 and 6:4. After eluting to the boundary line, the KLT plate was removed from the vessel and dried, then sprayed with terpenoid spot expositor or Liebermann Burchard and then observed under UV lamp 254 nm.

Results and Discussion

In this test, cellulose and silica gel GF254 plate were used as stationary phase. The mobile phase used was ethanol: ethyl acetate solution with a ratio of 9:1; 8:2; 7:3; and 6:4. To identify terpenoid compounds in ethanol extract of pegagagan leaves, Liebermann Burchard spray reagent was used (Fajriaty, I., IH, H., Andres., Setyaningrum, 2018). Spots on the stationary phase can be observed under a UV lamp 254nm and then calculated its Rf. The results of the KLT analysis and Rf values can be seen in the table.

The Rf value obtained indicates the presence of terpenoid compounds in the 9:1 eluent ratio which is characterized by the magnitude of the Rf value obtained which is 0.64. While in the eluent ratio of 8:2; 7:3 and 6:4 produced Rf values of 0.67; 0.69 and 0.75, respectively. From these results it can be concluded that the Rf value obtained in the 9:1 ratio of 0.64 indicates that the results of the ethanol extract of gotu kola leaves positively contain triterpenoid compounds which are derivatives of terpenoids because the resulting Rf value meets the standard Rf triterpenoid of 0.50-0.89 (Ruliyanti, 2020). While the standard Rf value for terpenoids alone is 0.32.

Several factors affect the thin layer chromatography (CLT) profile, namely the chromatographic system on the mobile phase and stationary phase, the suitability of the solvent for the target compounds in the extract, the quantity of extract weighing, and the selection of the right visualization method. Polarity is very influential on the Rf value obtained. Rf values are characterized for certain compounds on certain eluents. A compound that has a larger Rf means it has low polarity, and vice versa. This is because the stationary phase is polar. Meanwhile, when viewed from the influence of the eluent used, the higher the polarity of the eluent, the higher the Rf value. (Fajriaty, I., IH, H., Andres., Setyaningrum, 2018)

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Table 1. Hasil Analisis dan Nilai Rf KLT Ekstrak Etanol Daun Pegagan

Compounds: Terpenoids	Compounds: Terpenoids	Compounds: Terpenoids	Compounds: Terpenoids
9:1	8:2	7:3	6:4
			
Rf : 0,64	Rf : 0,67	Rf : 0,69	Rf : 0,75

Conclusions

Several plants planted by the Gunungpuyuh community in Sukabumi City can be developed and utilized as biolarvicides.

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