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ANTIOXIDANT ACTIVITY TEST OF JENGKOL LEAF EXTRACT (Archidendron pauciflorum (Benth.) I.C. Nielsen) USING DPPH (1,1-diphenyl-2-picrylhydrazyl) METHOD

Aisyah Baddriah Manurung[1], Ridwanto[2]
[1,2] University Muslim Nusantara Al-Washliyah Medan City

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Corresponding Author:

Aisyah Baddriah manurung
BOA: University Muslim Nusantara Al-Washliyah Medan
Email: aisyahmanurung122@gmail.com

ABSTRACT

Jengkol leaf (Archidendron Pauciflorum (Benth.) I.C.Nielsen) contains alkaloids, tannins, saponins, flavonoids, steroids/triterpenoids. The objective of this research was to determine the class of chemical compounds contained in simplisia and jengkol leaf extract as well as the antioxidant activity of jengkol leaf extract. The research stages include the collection and processing of simplicia, the manufacture of extracts by maceration with 96% ethanol solvent. Phytochemical screening of jengkol leaf powders and extracts includes examination of alkaloid compounds, tannins, saponins, flavonoids, and steroids. Examination of the characteristics of simplicia powder. The antioxidant and extract activity test of jengkol leaf extract was carried out using the DPPH method (1,1-diphenyl-2-picrilhydrazyl), where DPPH absorption was measured using a Vis spectrophotometer at a wavelength of 516 nm. The results of phytochemical screening, powders and simplician extracts contain alkaloid compounds, tannins, saponins, flavonoids, steroids / triterpenoids. The results of the examination of the characteristics of simplicia powder obtained a moisture content of 6.66%, a water-soluble juice content of 16.66%, an ethanol soluble juice content of 26.66%, a total ash content of 1.3%, an acid insoluble ash content of 0.42%. The results of measuring the antioxidant activity of jengkol leaf extract showed the strength of the "very strong" category with an IC50 value of 2.4807 ppm.

Keywords:
Antioxidants, Jengkol Leaf, DPPH.

1. INTRODUCTION

Free radicals are molecules that have one or more unpaired electrons in their outer orbit, and are very labile and reactive. Free radicals have an important role in tissue damage and pathological processes in living organisms. Abnormal levels of free radicals that enter the body can attack susceptible compounds, such as lipids and proteins and have implications for the emergence of various diseases. This is because the oxidants that enter the body cannot be balanced by the antioxidants in the body. The human body has natural antioxidants from enzymes such as catalase, superoxide dimutase, and glutathione peroxidase. However, the body's natural antioxidants cannot fully protect against cell damage caused by external oxidants, which is why the human body requires additional antioxidants from outside [34]. Antioxidants besides being able to protect the body from free radical attacks are also able to slow down the occurrence of chronic diseases caused by a decrease in reactive oxygen species, especially hydroxyl radicals and superoxide radicals. Antioxidants also function to inhibit lipid oxidation which causes rancidity and damage to food. One of the antioxidants is flavonoids. These flavonoids will later bind to nitrogen oxides (NO) so that the levels of free radicals decrease [48]. In the body, antioxidants can react by cleaning reactive oxygen compounds or reducing their concentration locally, cleaning metal ions catalytically, scavenging free radicals that function as initiators such as hydroxyl, peroxyl and alkyl, breaking the chain of the chain of reactions initiated by free radicals absorbing reactions and cleaning. oxygen singlet. Antioxidants can inhibit lipid peroxidation reactions, so they are also called preventive antioxidants [40]. The antioxidant activity testing method can be carried out using the DPPH method (1,1-diphenyl-2-pikrylhidrazyl) used to determine antioxidant activity through its ability to capture free radicals. Antioxidant activity is measured based on electron transfer carried out by antioxidants, the CUPRAC (Cupric reducing antioxidant capacity) method, which is based on a simple oxidation-reduction reaction between antioxidants and free radicals, which can be measured through the reduction of cupric

ions (Cu2+) to cuprous (Cu+) by means of a donor electrons by antioxidants, the ABTS method (2,2-azinobis(3-ethylbenzothiazoline-6-sulfonic acid) is a method of testing antioxidant activity using the compound 2,2-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) as a radical generator free radicals, the ORAC (Oxygen Radical Absorbance Capacity) method, which measures the ability of antioxidants by means of hydrogen donors to reduce peroxyl radicals as seen from the decrease in the intensity of fluorescent molecules during reaction time, and the FRAP (Ferric Reducing Antioxidant Power) method, namely the ability of antioxidants to reduce ferric complexes (Fe3+).) from ferri-tripyridyl-triazine (TPTZ) to ferrous (Fe2+) y complex which is marked by a change in color to blue and can be measured at a wavelength of 593 nm. [3].

I.C. Nielsen) The description of the plant includes the area of the plant (habitat), other names for the plant, plant systematics, plant morphology, content of chemical compounds, properties of Jengkol leaves (Archidendron pauciflorum (Benth.) I.C. Nielsen).

Habitat of Jengkol Leaf Plants (Archidendron pauciflorum (Benth.) I.C. Nielsen) This plant is a typical plant in the Southeast Asian region. This Jengkol plant is able to live well in the lowlands to the mountainous areas, which are 1,000 m high and can live in several types of soil, one of which is latosol soil. In addition, jengkol plants are also resistant to drought [4].

2. METHOD

The method used in this research is descriptive method using jengkol leaf simplicia (Archidendron pauciflorum (Benth.) I.C. Nielsen). The simplicia characteristics and secondary metabolite content of jenggol leaf extract. The tests carried out included antioxidant activity tests using the DPPH free radical scavenging method..

The parameters used in this study included water content, total ash content, acid insoluble ash content, water soluble extract content, ethanol soluble extract content and secondary metabolite content including alkaloids, tannins, flavonoids, saponins, steroids by conducting phytochemical screening.

Jengkol leaf extract was prepared by maceration using 96% ethanol. The method:Weigh 500 g of the simplicia powder into a vessel, then pour it with 75 parts (3750 mL) of 96% ethanol extract and stir occasionally. After 5 days the mixture is filtered and the dregs are squeezed out. Wash the dregs with sufficient 96% ethanol liquid to obtain 100 parts (5000 mL) of macerate. Then transferred to a closed vessel, left in a cool place protected from light for 2 days and sprinkled. Maserate was concentrated using a rotary evaporator at a temperature of no more than 400C and a viscous extract was obtained (Depkes RI, 1979).

Figure 1. Religiousity, spirituality and subjective well being according sex.
The graph gender of (a) religiousity and (b) spiritualit

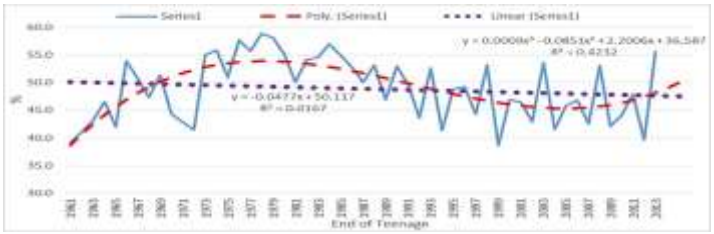

Figure 2. Modelling prevalence of teenage pregnancy 1961-2013

Table 1. Sample distribution

Case	Bangkok	Surabaya	Total
DM	30	30	60
HT	35	33	68
DM&HT	35	33	68
Total	100	96	196

3. RESULTS AND DISCUSSION

The results of plant identification carried out at the Medanese Herbarium (MEDA) Biology Research Center, Faculty of Mathematics and Natural Sciences, University of North Sumatra proved that the plant used for this research was jengkol leaves (Archidendron pauciflorum(Benth.) I.C.Nielsen). see Appendix 1 page 64. The results of macroscopic examination of jengkol leaf simplicia showed that compound jengkol leaves (Archidendron pauciflorum (Benth.) I.C.Nielsen) which grow opposite each other, are oval in shape with rounded bases, while the tips are pointed, the average leaf length is 10-20 cm , leaves 5-15 cm wide, thin, dark green.

4. CONCLUSION

Based on the research results obtained, it can be concluded that:

1. The characterization results produced meet the requirements according to the test parameters for the characterization of simplicia which has the same tribe as jengkol leaves, namely the Fabaceae tribe which is listed in the Indonesian Herbal Pharmacopoeia, except for the determination of acid-insoluble ash content, this is influenced by the type of plant, the origin of the plant and the place where the plant grows The results and phytochemical screening showed that the jengkol leaf simplicia contained chemical compounds belonging to the alkaloids, flavonoids, tannins, saponins and steroid/triterpenoid groups.
2. In this study I used the DPPH method. The DPPH method has the advantage that the analytical method is simple, fast, easy and sensitive to samples with small concentrations. The antioxidant activity test of the ethanol extract of jengkol leaves using the DPPH method showed antioxidant activity with a 50% Inhibitory Concentration (IC50) value of 2.4807 ppm. These results indicate very strong antioxidant activity.

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It is recommended for future researchers to test the antidiabetic and antibacterial activity of jengkol leaves (Archidendron pauciflorum (Benth.) I.C.Nielsen).

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