

<https://doi.org/10.46344/JBINO.2021.v010i01.08>

TOTAL FLAVONOID, ALKALOID AND TANNIN ON LEAVES AND STEMS OF ABELMOSCHUS MANIHOT L. MEDIK FROM PALU OF CENTRAL SULAWESI

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ABSTRACT

Introduction: Abelmoschus Manihot (L.) Medik are herbal medicinal plants, which a rich source compounds of bioactive phytochemical nutrients both on the leaves and stems. **Objective:** The purpose of the study is analyze the total flavonoid, alkaloid and tannin equivalent on leaves and stems of Abelmoschus Manihot (L.) Medik extracts From Palu of central Sulawesi, was performed on Leaf and stems Extract (Ethanol). **Methods:** The present study is Analyze of total flavonoid equivalent quercetin, Analyze of total tannin equivalent tannic acid and Analyze of total Alkaloid equivalent quinine on leaves and stems of Abelmoschus Manihot (L.) Medik extracts was performed for Leaf and stems Extract (Ethanol). **Results:** The results potentially of total activity of flavonoid, alkaloid and tannin equivalent on leaves of Abelmoschus Manihot (L.) Medik is 2,39 %, 0,09 % and 63,60 % and the activity total of flavonoid, alkaloid and tannin equivalent on stems in Abelmoschus Manihot (L.) Medik is 0,46 %, 0,04 % and 12,45 %. **Conclusion:** The present study has Potential to further research with the extraction and isolated a chemical compound of flavonoid, alkaloid and tannin from Abelmoschus Manihot (L.) Medik with proper standardization methods.

Keywords: *Abelmoschus Manihot (L.) Medik, Total Flavonoid, Alkaloid, Tannin.*

INTRODUCTION

Abelmoschus Manihot (L.) Medik are herbal plants with rapid growth, where these plants can only be found in areas with tropical climates, especially in Africa and Asia. The community of Palu in Central Sulawesi knows as a gedi plants, where the gedi plant have with 2 types of gedi, which namely red gedi and green gedi. Gedi plants in particular have long been known and used by the people in central sulawesi as a raw materials for vegetables. For the type of red gedi plant species, traditionally used for the treatment disease. The red gedi plant has a characteristic with a green of leaves and it's streaked with red stems. In Pharmacological studies, where the *Abelmoschus Manihot* (L.) Medik ethanol extract have the highest significant analgesic effect activity, was observed only by 400 mg/Kg dose as compared standard of drug and the flowers also reported to be used in tooth¹. The *Abelmoschus Manihot* (L.) Medik also have the significant antiinflammatory effect, where the dose 100,200,400 mg/Kg body weight². Reported isolated compounds of *Abelmoschus Manihot* (L.) Medik have responsible as a traditional medicine for the similar biological activity and the chemical composition³. The scavenging activity of *Abelmoschus Manihot* (L.) Medik using 1,1-diphenyl-2-picryl hydrazil have IC₅₀ highest values obtained for N-Hexane extract 35,83 µg/mL and potency as a radical scavenging (IC₅₀ < 50 µg/mL)⁴. The study of phytochemistry and pharmacology *Abelmoschus Manihot* (L.) Medik, where the *Abelmoschus Manihot* (L.) Medik contains saponin, alkaloids, steroids, flavonoids and triterpenoids⁵. The

present study is Analyze of total flavonoid equivalent quercetin, Analyze of total tannin equivalent tannic acid and Analyze of total Alkaloid equivalent quinine on leaves and stems of *Abelmoschus Manihot* (L.) Medik extracts was performed for Leaf and stems Extract (Ethanol).

MATERIALS AND METHODS

Materials

Fresh leaves and stems of *Abelmoschus Manihot* (L.) Medik. was collected from Palu in Central Sulawesi, of Local Health Herbal traditional, herbarium. Leaves *Abelmoschus Manihot* (L.) Medik were cleaned and dried at room temperature for a period of 15 days under room. Finely leaf *Abelmoschus Manihot* (L.) Medik were weighed and extracted using maceration apparatus by solvents ethanol

Tools

Spectrophotometry Uv-Vis and glass tools used in the chemical laboratory analysis.

Method

The study is analyze total of flavonoid, alkaloid and tannin equivalent on leaves and stems of *Abelmoschus Manihot* (L.) Medik extracts From Palu of central Sulawesi, was performed Extract (Ethanol).

Preparation of test solution

For study the total activity of flavonoid, alkaloid and tannin equivalent on leaves and stems of *Abelmoschus Manihot* (L.) Medik extracts From Palu of central Sulawesi were prepared from this for carrying out total equiavelent studies where flavonoid, Alkaloid and Tannin in leaves and stems of *Abelmoschus Manihot* (L.) Medik extracts .

Analysis of Total activity Flavonoid

The first Make a standard curve and considering the standard quercetin 10.0 mg standard solution add 0.3 ml of 5% sodium nitrite. After 5 minutes add 0.6 ml of 10% aluminum chloride, wait 5 minutes, add 2 ml of 1 M sodium hydroxide. Add it with distilled water up to 10 ml with a pumpkin measure. Then move it into the cuvette and read of absorption at a wavelength of 510 nm and than Determination of total flavonoid test Carefully weigh 100 mg of the test sample, put it in a 10 ml test tube. Add 0.3 ml of 5% sodium nitrite. After 5 minutes add 0.6 ml of aluminum chloride 10%, wait 5 minutes, add 2 ml of sodium hydroxide 1 M. Add it with distilled water up to 25 ml with pumpkin measuring and dilute as needed. Move it into cuvettes, read of absorption at a wavelength of 510 nm⁶.

Analysis of Total activity Tannin

Make a standard curve and than Considering carefully the standard solution of Tannic acid, then add 0.1 ml of folin Ciocalteu reagent and vortex, then waiting for about 5 minutes, then add with 2 ml of sodium Carbonat 20% and then waiting for about 5 minutes then add with aquadest of 10 ml. Then make a stock solution, pipette the standard solution 2 ml and add up to 10 ml with aquadest and dilute according to the standard curve concentration. Then the fixed absorbance of absorption was read at a wavelength of 760 nm after incubation for 30 minutes at room temperature where the standard weight of tanic acid was 0.0100 g. Then made standard 1 1,563 ppm, Standard 2 3,125 ppm, standard 3 6,250 ppm, standard 4 12,5 ppm, standard 5 25 ppm, standard 6 50 ppm, standard 7 100 ppm, standard 8 200 ppm and standard 9 400 ppm. To

Determination of total Tannic Acid with 50 mg extract and 10 ml of chloroform then strain and vaporize the chloroform and add 1 ml of sample solution to volume 10 ml then take 1 ml of sample solution and add 0.1 ml of Ciocalteu folin reagent and vortex wait for about 5 the next minute add 2 ml of sodium carbonat 20% and vortex again wait until 5 minutes, then add it with aquadest to a volume of 10 ml. Then the absorbance of absorption is read at a wavelength of 760 nm after incubation for 30 minutes at room temperature⁷.

Analysis of Total activity Alkaloid

Make a standard curve, where considering carefully the Quinine standard 10 mg, then add 5 ml of 2 N HCl then shake and filter, wash the solution with 10 ml of chloroform 3 times in the separating funnel and then the chloroform phase where the neutralize with the solution with 0.1 N NaOH then add 5 ml of BCG solution and 5 ml of phosphate Buffer, Extraction of solution with 5 ml of chloroform with magnetic stirrer with a speed of 500 rpm for 15 minutes, extraction with chloroform and then collect chloroform phase and evaporate with Nitrogen Gas, and add chloroform to volume of 5 ml and then read of absorption are carried out at a wavelength of 470 nm. To Determination of the total alkaloid test Weigh the sample \pm 100 mg and add 5 ml 2 N HCl then shake and filter. Next wash the solution with 10 ml of chloroform 3 times in a separating funnel and then dispose of the chloroform phase and neutralize the solution with add 0.1 N NaOH then add 5 ml of BCG solution and 5 ml of phosphate buffer, extract the solution with 5 ml chloroform, stir with a magnetic stirrer with a speed of 500 rpm for 15 minutes,

repeating extraction with chloroform 2 times and then collect chloroform and evaporate phase with Nitrogen Gas and add it with chloroform to a volume of 5 ml and then read of absorption are carried out at a wavelength of 470 nm⁸.

RESULTS AND DISCUSSION

Table 1. Total Flavonoid, Alkaloid and Tannin equivalent on Leaves of *Abelmoschus manihot* L. Medik

Test Parameters	Results	Unit	Method
Total Flavonoid equivalent Quercetin	2,39	%	Spektrofotometri Uv-Vis
Total Alkaloid equivalent Quinine	0,09	%	Spektrofotometri Uv-Vis
Total Tannin equivalent Tannic Acid	63,60	%	Spektrofotometri Uv-Vis

Table 2. Total Flavonoid, Alkaloid and Tannin equivalent on Stems of *Abelmoschus manihot* L. Medik

Test Parameters	Results	Unit	Method
Total Flavonoid equivalent Quercetin	0,46	%	Spektrofotometri Uv-Vis
Total Alkaloid equivalent Quinine	0,04	%	Spektrofotometri Uv-Vis
Total Tannin equivalent Tannic Acid	12,45	%	Spektrofotometri Uv-Vis

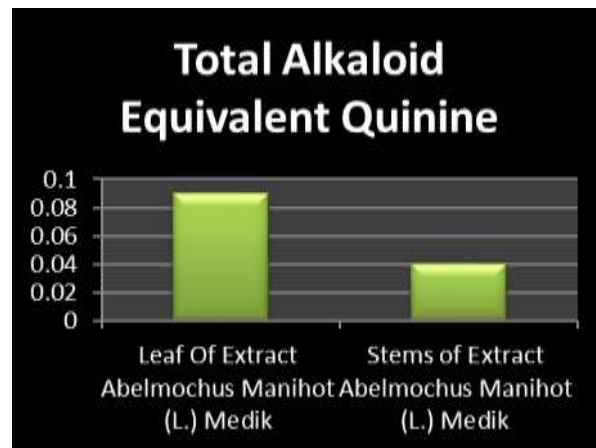


Figure 2. Total Alkaloid equivalent Quinin on Leaves and Stems of *Abelmoschus manihot* L. Medik

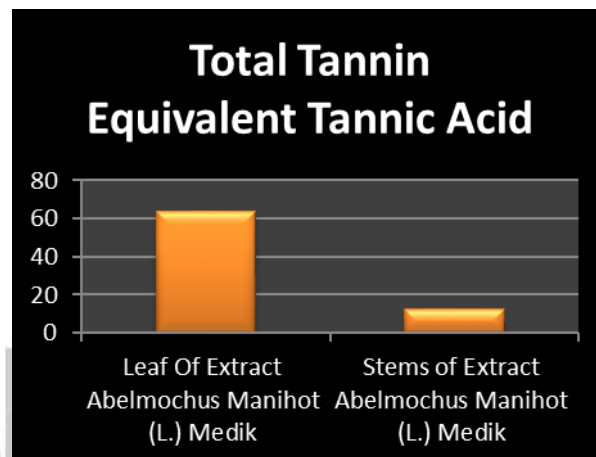


Figure 3. Total Tannin equivalent Tannic Acid on Leaves and Stems of *Abelmoschus manihot* L. Medik

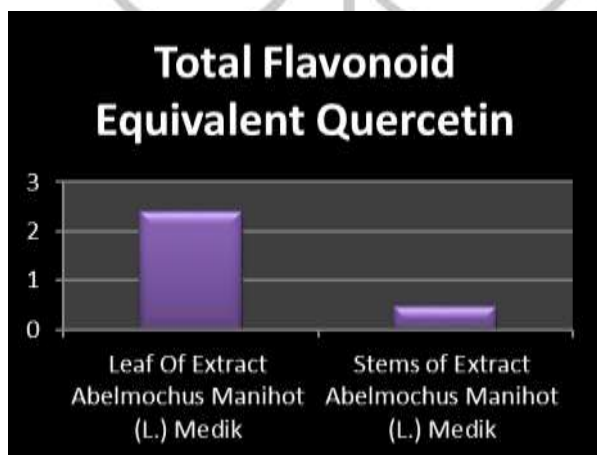


Figure 1. Total Flavonoid equivalent Quercetin on Leaves and Stems of *Abelmoschus manihot* L. Medik

RESULTS AND DISCUSSION

In the present study, the total of flavonoid, alkaloid and tannin equivalent on leaves and stems of *Abelmoschus Manihot* (L.) Medik extracts From Palu of central Sulawesi. Leaves and stems of *Abelmoschus Manihot* (L.) Medik were cleaned and dried at room temperature for a period of 15 days under room. The leaf and stems *Abelmoschus Manihot* (L.) Medik were extracted use maceration by solvents ethanol. The total activity potential of flavonoid equivalent quercetin, alkaloid equivalent quinine and tannin equivalent tannic acid in leaves and stems of *Abelmoschus Manihot* (L.) Medik is displayed in Tables 1 and 2 and Figure 1, 2 and 3. The results potential of total activity of flavonoid equivalent quercetin, alkaloid equivalent

quinine and tannin equivalent tannic acid in leaves of *Abelmoschus Manihot* (L.) Medik is 2,39 %, 0,09 % and 63,60 %. The total activity of flavonoid equivalent quercetin, alkaloid equivalent quinine and tannin equivalent tannic acid in stems of *Abelmoschus Manihot* (L.) Medik is 0,46 %, 0,04 % and 12,45 %. The total of flavonoid equivalent quercetin in leaves and stems of *Abelmoschus Manihot* (L.) Medik is 2,39% and 0,46%, it's extensive natural products in *Abelmoschus Manihot* (L.) Medik. Flavonoid of *Abelmoschus Manihot* (L.) Medik can be used as an antioxidant to regeneration on vero (normal) cells and to preventing the damage of cells and as a nutritional of *Abelmoschus Manihot* (L.) Medik with highest total flavonoid, where it's significantly to reduce neurologic deficits, infact area and histologic change in brain tissue⁹. The content of alkaloid in leaves and stems of *Abelmoschus Manihot* (L.) Medik is 0,09 % and 0,04%, alkaloid it's protect the body from parasit attacks, as a regulators of cell growth and to stimulate the regeneration of new cells. Alkaloid of *Abelmoschus Manihot* (L.) Medik as a source of minerals to maintain the ion balance in the body and alkaloid of *Abelmoschus Manihot* (L.) Medik where potentially prevented of kidney and liver from alleviated progression of Diabetic Nephropathy¹⁰. The content of tannin in leaves and stems of *Abelmoschus Manihot* (L.) Medik is 63,60 % and 12,45%. Tannin in *Abelmoschus Manihot* (L.) Medik as an astringent or chelation to the cell ephithel membrane and the biological activities and therapeutic potentially as a diuretic anti microbial¹¹. The medicinal plant on leaf and stems of *Abelmoschus Manihot* (L.) Medik from Palu in Central sulawesi extracts has a potential to

further research with the extraction and isolated a chemichal compound of quercetin, alkaloid and tannin from *Abelmoschus Manihot* (L.) Medik with proper standardization methods.

CONCLUSION

The results potential of total activity flavonoid equivalent quercetin, alkaloid equivalent quinine and tannin equivalent tannic acid on leaves of *Abelmoschus Manihot* (L.) Medik is 2,39 %, 0,09 % and 63,60 % and total activity flavonoid equivalent quercetin, alkaloid equivalent quinine and tannin equivalent tannic acid on stems of *Abelmoschus Manihot* (L.) Medik is 0,46 %, 0,04 % and 12,45 %.

ACKNOWLEDGEMENT

Thanks to Gadjah Mada University, Research and Development Laboratory.

CONFLICT OF INTEREST

The authors have no conflict of interest.

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