

DISSOLUTION EFFECTIVENESS OF MORINGA LEAF PILLS (*MORINGA OLEIFERA L.*) AND ALOE VERA (*ALOE BARBADENSIS MILLER*)

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ABSTRACT

Oral preparations with level solubility tall so speed dissolution substance active from form preparations Becomes more fast, anyway with preparations with speed dissolution low so speed dissolution substance active from form preparations Becomes slow, so rate absorption drug more slow as well as produce bioavailability low. Materials potion drug traditional for example from ingredient plant natural around which not yet experience processing whatever. Ingredient nature used _ as drug traditional in study this is plant leaf moringa and tongue crocodile. Leaf Moringa (*Moringa oleifera L.*) has various type effect therapy like antimicrobial, anticancer, anti-inflammatory, effect antidiabetic as well as as antioxidants. Compound chemical in the leaves _ moringa that is there is polyphenols, acids phenolics, flavonoids, glucosinolates, alkaloids, vitamins, acids phenolics, isothiocyanates, tannins and saponins. Plant tongue crocodile (*Aloe barbadensis Miller*). kindly chemistry, tongue crocodile consists over 90% water and 4% carbohydrates, the rest consists of minerals, 17 kinds amino acids. Gel found on the tongue crocodile there is content substance antibacterial as well as possible antifungal _ stimulate tiroblast . Study this aim for knowing effectiveness dissolution pill from leaf moringa and tongue crocodile with use method study experimental. Result of study this yield extract leaf moringa and tongue crocodile obtained on the leaves moringa by 6.38% and tongue crocodile 6.268%. Assessment test preparations pill Fulfill condition uniformity weight and fulfill dissolution test conditions because time the required crush for 30 minutes.

Keywords: dissolution medicine; medicine traditional; leaves moringa; tongue crocodile

INTRODUCTION

preparation pharmacy with method gift orally to achieve concentration therapeutic caused exists speed dissolution . Bioavailability oral dosage depends with a number of type factor that is solubility in water, permeability medicine , rate dissolution as well as metabolism on track first (Dara, 2017) . Speed dissolution as well as solubility is an important parameter for form preparations pharmacy like preparations oral medication . Oral preparations with level solubility tall so speed dissolution substance active from form preparations Becomes more fast , anyway with preparations with speed dissolution low so speed dissolution substance active from form preparations Becomes slow , so rate absorption drug more slow as well as produce bioavailability low (Sagala, 2019) .

Explanation drug traditional according to PERMENKES RI No. 246/Menkes/Per/V/1990 consisting on 3 forms including herbs, standardized herbs as well as phytopharmaca . Herb yourself is characteristic typical as well as inheritance value that goes down hereditary from grandmother ancestor our earlier . In today's times use of herbal medicine among Public already start increased , fine utilized guard health or as treatment when sick . this _ show that herbal preparations have accepted by the Indonesian people. Drugs used by the general public _ that is drug tradition that has content ingredient nor potion material that can maintain , treat and restore health body Materials potion drug traditional for example from ingredient plant natural around generally _ many cultivated by society around yet _ experience processing whatever too _ except stated otherwise _ form material already _ dried (Permadi, 2018) . Regulation from the Minister of Health of the

Republic of Indonesia No.7 of 2012 concerning Registration Drug Traditional stated _ drug traditional prohibited contain Material : ethyl alcohol more than 1% except in form preparations tincture used _ with method dilution , materials chemical medicine which is results from efficacious isolation / synthetic _ as medicine , pregnant ingredient narcotics or psychotropics , other based substances consideration health or based with study endanger health (Willy Tirza Eden, Buanasari, Shihabuddin, 2016) _ Viewed globally today __ Request herbal - based drugs , products health , drugs , supplements food and so on _ with health the more increases , which will caused study plant ntracetical which is plant ingredient food as well as can give benefit as increasingly healthful treatment _ _ increase because it has so much potential developed in the industry food as well as in pharmacy (Silalahi, 2020) .

Ingredient nature used _ as drug traditional in study this is plant leaf moringa and tongue crocodile . Leaf Moringa (*Moringa oleifera L.*) is one of them plant nutricetical because have score Nutrition is also beneficial for healing disease . Already there is various research shows _ that leaf moringa have various type effect therapy like antimicrobial , anticancer , anti-inflammatory , effect antidiabetic as well as as antioxidants . Compound chemical in the leaves _ moringa that is there is polyphenols , acids phenolics , flavonoids, glucosinolates , alkaloids, vitamins, acids phenolics , isothiocyanates , tannins and saponins (Jami et al., 2022). Plant tongue crocodile (*Aloe barbadensis Miller.*) often called plant wonderful because there is many content compound nutritious inside . Tongue crocodile have content the same nutrition like in plants another green . kindly chemistry , tongue crocodile consists over 90% water and 4% carbohydrates , the rest consists of minerals, 17 kinds amino acids. Gel found on the tongue crocodile there is content substance antibacterial as well as possible antifungal _ stimulate tiroblast . Tiroblast that is cells nutritious skin _ as healer wound . Tongue crocodile there is content salicylate (reducer pain), anti- swelling same like aspirin. gels from tongue Crocodile also contains lignin which can guard humidity skin so that no fast dry , wrinkled and dull . On the tongue crocodile there is fluid colored yellow that has the aloin content comes from the latex in the parts outside skin . fluid yellow this different with aloe gel alligator , liquid yellow on the tongue crocodile could nutritious as drug laxative (Marhaeni, 2020) .

On research this drug traditional from ingredient natural leaf moringa and tongue crocodile made in form preparations pharmacy form pills . Pill is something preparations pharmacy shaped mass round that has content one or more ingredient medicine , inside preparations pill there is ingredient addition among them filler , binder , wetting agent , sowing as well as coating . Average pill weight range between 100-250 mg (Ibrahim & Putra, 2016) .

METHOD

Study this use method experiments carried out in the laboratory Phytochemistry of the Kendal STIKES Pharmacy Study Program . Study conducted start from month July until September 2022.

Tools and materials

Tools used in research this that is scales analytical , chromatographic chamber , tube reaction , erlenmeyer , equipment maceration , beaker glass, cup porcelain , funnel , glass measure , pumpkin measure , aluminum foil, paper filter, mortar and stamper , water bath as well equipment another glass. Materials used in research _ this that is extract leaf moringa , powder leaf moringa , extract tongue crocodile , succus liq. , glycerin, gum arabic, talc, and 96% ethanol .

Extraction

Extraction ingredient conducted use method maceration use plant leaf the previous moringa already blended fine Becomes powder as much as 260 gr and plants tongue crocodile as much as 250 gr. Maceration ingredient use solvent 96% ethanol (1:6) as much as 155 ml. circulation conducted up to 5 times obtained filtrate . The filtrate has been got then concentrated on waterbath until obtain extract desired thickness.

Making preparation Pill

each ingredient extract required plants _ weighed especially first . Extract leaf moringa 1120 mg, powder leaf moringa as much as 1120 mg, extract tongue crocodile as much as 1100 mg , succus liquiritae as much as 1100 mg, glycerin to taste, and talcum to taste . After all ingredient already weighed and prepared then mix extract leaf moringa , powder leaf moringa , extract tongue crocodile , succus liquiritae , gum Arab grind until homogeneous then plus with glycerin little by little grind until homogeneous and well mixed _ got mass good pills . _ Batter pills already _ so rolled until form cylinder with use tool already pillen plank sprinkled with talcum agar surface no sticky then formed and cut into pieces . Pill rounded off on the tool Pillen roller arrived form desired mass _ 25 pills . _ Stage final evaluation test was carried out effectiveness from preparations pills

Dissolution Test preparation Pill

Dissolution test was carried out use tool disintegration tester. With method enter one pills in each tube in the basket then entered disc each the tube then tool activated . Medium used ie water with temperature 37°C, except otherwise stated is used listed fluids _ in each monograph . At the end limit time already _ determined then lift basket and observed all pills . Pill must destroyed perfect , if there are 1 or 2 pills that don't destroyed with perfect so testing dissolution must repeated with the other 12 pills , no not enough of 16 pills of 18 pills must destroyed with perfect .

Uniformity Test Weight

A total of 25 pills weighed one by one weight pills, then counted the average weight obtained .

RESULTS AND DISCUSSION

Extraction

Simplicia powder of 260 grams of Moringa leaves and 250 grams of aloe vera were extracted using the maceration method using ethanol 70 with a ratio (1:6) of 1.5 liters for 5 days using continuous stirring. The phytate is then filtered & evaporated over a water bath to form a thick extract. Concentration results obtained a viscous green extract on Moringa leaves of 15.82 gr and a clear viscous extract on aloe vera of 15.62 gr. While the yield obtained according to the yield calculation is compared using the amount of simplicia used on Moringa leaves as much as 6.328% and on aloe vera as much as 6.268%. The extraction method using maceration was chosen because is the simplest extraction method, namely by dissolving the simplicia powder using an extracting agent. The best extraction temperature is carried out in the temperature range of 20°C-80°C but the temperature is lower worn must be below the boiling point of the solvent worn.

Table 1.

Formulation of moringa leaf extract pills (<i>Moringa oleifera L.</i>) and aloe vera (<i>Aloe vera L.</i>)		
Material name	Formulas	Function
Moringa leaf extract	1100mg	Active substance
Aloe extract	1100mg	Active substance
Moringa leaf powder	55mg	Filler
Succus Liquiritae	1100mg	binder
Glycerin	qs	Wetting
Talcum	qs	Sower

Preparation of preparations

Based on the pills already formed 25 pills using a pill weight of 150 mg each. Moringa leaf extract pills and aloe vera have the ability to prevent diabetes (reduce blood sugar levels). Pill mass is prepared by mixing Moringa and aloe vera leaf extracts, fillers (Moringa leaf powder and aloe vera) & binder (*succus L.*) grind until smooth then mix the powder is dripped using a wetting agent (*glycerin*). Glycerin can prevent pills in storage from hardening too much, because glycerin doesn't evaporates easily . However , giving too much glycerin so that the pills don't become soggy. After the pill mass is formed, the stem is formed by rolling it and cutting it using a cutting knife there is in pill board sense . The pills that are not yet round are rolled on an agar pill rounding board round. To prevent the inherent pill past in senses , then the board is dusted using talcum.

Pill Evaluation Test

Weight Uniformity Test

The results of the weight uniformity test showed that the pills met the requirements specified by the Indonesian Pharmacopoeia, namely no more than two pills , each of which differed in weight according to the homogeneous weight . which Column B has been determined (greater than 20%) and none of the pills has a weight that deviates from homogeneous weights specified column A (greater than 10%). The homogeneous weight of the pills obtained is 142 mg.

Table 2.
Weight Uniformity Test Results

No.	Pill weight	BA	BB
1	0.143mg	√	
2	0.142 mg	√	
3	0.138 mg	√	
4	0.134 mg	√	
5	0.136 mg	√	
6	0.144 mg	√	
7	0.142 mg	√	
8	0.144 mg	√	
9	0.143mg	√	
10	0.119 mg		√
11	0.137 mg	√	
12	0.144 mg	√	
13	0.145 mg	√	

No.	Pill weight	BA	BB
14	0.148 mg	√	
15	0.145 mg	√	
16	0.150 mg	√	
17	0.144 mg	√	
18	0.143 mg	√	
19	0.145 mg	√	
20	0.144 mg	√	
$\Sigma = 0.142 \text{ mg}$			
Upper limit 10 % (18 pills)		Lower limit 20 % (2 pills)	
$0.142 + 10\% = 0.157 \text{ mg}$		$0.142 + 20\% = 0.168 \text{ mg}$	
$0.142 - 10\% = 0.128 \text{ mg}$		$0.142 - 20\% = 0.114 \text{ mg}$	
Range (0.128-0.157)		Range (0.114-0.168)	

Conclusion : Pill preparations meet the requirements in FI edition III.

Table 3. Deviation of Weight Uniformity

For the average pill weight	Biggest digression	
	18 pills	2 pills
100mg-250mg	10%	20%
250mg-500mg	7.5%	15%

Destroy Time Test

Moment test equipment destroyed consists of a basket rack which has six holes that are located vertically above the sieve mesh number 10. During the experiment the tablets were placed in each hole of the basket, then the basket moved up and down in the transparent solution at a speed of 29-32 revolutions per minute. moment intervals destroyed is 5-15 minutes. Based on the moment test destroyed what has been done meets the conditions because moment destroyed obtained in this dissolution test is 14 minutes . These results are synchronous use the literature which states that meets the moment destroyed for example stated in the compression that is in water 36-38° for 15 minutes make uncoated pill & 60 min _ for coated pills. At first this stated that the harder a pill, the longer it disintegrates. Other factors that hypnotize moment destroyed is an additive used .

CONCLUSION

Pill preparations of Moringa leaf extract and aloe vera have the effect of preventing diabetes (reducing blood sugar levels). The yield of moringa and aloe vera leaf extracts obtained from moringa leaves was 6.328% and from aloe vera was 6.268 % . The pill preparation assessment test met the conditions of uniformity of weight and met the conditions of the dissolution test time the required crush for 30 minutes .

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