

EFFECTIVENESS AROMA THERAPY GOTU KOLA (*CENTELLA ASIATICA*) AGAINST INSOMNIA DISORDER

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Abstract

*The purpose of this article is to determine the effectiveness of gotu kola (*Centella asiatica*) aroma therapy against insomnia disorders. This research is an experimental study with a quasi-experimental design pre and post test without control. The research method used is an experimental method by testing the aromatherapy effect of gotu kola leaf ethanol extract on mice as test animals, with drugs. The result is the aromatherapy effect of gotu kola (*Centella asiatica*) on insomnia disorders, this is because the sedative effect of gotu kola involves: GABA receptors in the central nervous system. The content of gotu kola which consists of brahmoside and brahminoside works to upgrade GABA through a cholinergic mechanism. The conclusion of the study showed that there was a significant difference between the level of insomnia before giving aromatherapy and after giving aromatherapy to research subjects.*

Keywords– Aromatherapy , Gotu kola , Insomnia

1. Introduction

Insomnia is problem health which need treatment . Insomnia is inability for start sleep , difficult maintain state sleep , it's hard fall asleep at night day or disturbance sleep that makes sufferer feel not yet enough sleep on moment wake up . More from 26 million Indonesian people suffer disturbance sleep . Every year estimated around 20% - 50% adults report existence disturbance sleep and about 17% experience disturbance sleep seriously . Insomnia could cause impact for health physique including improvement _ lust eat what you can result in obesity , diabetes, disease heart coronary heart disease , hypertension and disorders system immune . Overcome problem difficult sleep this a number of individual use various medicine - drugs that have effect sedatives and hypnotics under supervision doctor . Will but many between drug the which character toxic and cause death , so required existence drugs effective , safe and effective sedative easy obtained . (Tyrer . 1991)

Use plant as drugs already known large good in a country develop as well as developed countries . Usage drug traditional for treatment has long been practiced by the community . Results and benefits has feel by direct that drug traditional made from natural , more safe and no character toxic . Although thus processing drug traditional should noticed so that drug traditional permanent safe used . (Sunnara , 2012).

Moment Indonesia is one of the producing countries plant medicine that potential with diversity biological which have . If seen from diversity the flora enough many type plant who can utilized as plant medicine . one _ plants that can cause effect sedative is gotu kola . Leaf gotu kola often used by the community as drug for soothing . Content triterpenoids in leaf gotu kola cause effect soothing .

Aroma therapy work with stimulate cells nerve smell and influence limbic system work with Upgrade feeling positive and relaxed . Because of feelings relax that 's the stress level or depression somebody will decreased and level insomnia too will decreased .

2. Method***Method and Design Study***

Study this is study experimental with design quasi experimental pre and post test without control. Method study which used is method experimental with test effect aroma therapy extract ethanol leaf gotu kola to mice as animal experiment , with Drug

Location Study

Study done laboratory Pharmacology and laboratory analysis Chemistry Study Program Faculty An Nuur . University of Science and Health

Time Study

Study done During two month .

Taking Sample

Sample which tested in study this is leaf gotu kola . Technique taking sample by Purposive sampling , namely taking sample without consider the place grow and place The geography . Samples taken _ is leaf gotu kola .

Tool and Ingredients***Tool***

Stem Stirrer , glass beaker , erlenmeyer , glass measure , paper filter , box partition , mortar and stamper, oral needle, dropper, sheath hand , stop watch/hour, scales electricity .

Ingredients

Alcohol 70%, Aquadest , Solution suspension CMC 0.5%, Drug Herbs Standardized sleep , powder gotu kola .

Calculation***Calculation Dose***

Calculation Suspension Drug Herbs Standardized sleep:

Sleep Preparation = 600 mg

Dose sleep for man = 600 mg Dose conversion man to mice = 0.0026

Sleep Dose for mice 20 g = 600 mg x 0.0026 = 1.56 mg

Making Soap solution:

Heavy 10 tablets = 6000 mg

Heavy 1 tablet = 600 mg

Dosage/kgBB = $1000\text{g} / 20\text{ g} \times 1.56\text{ mg} = 78\text{ mg/kgBB}$

Mice which given as much 3 tail, each given as much 1.56 mg Deep in 0.2 ml. So Sleep volume created is = $0.2\text{ ml} \times 3 = 0.6\text{ ml}$. For avoid dose which not enough, so volume suspension sleep exaggerated Becomes 10 ml. Mash 10 tablets of Lelap then weigh 78 mg of Lelap powder, suspend in 10 ml CMC 0.5%.

The volume of the Lelap suspension administered to mice was 0.2 ml, based on heavy body mice is:

Weight mice (grams)/ $20\text{ g} \times 0.2\text{ ml} = x\text{ ml}$

Making Extract Ethanol Leaf gotu kola

Calculation

Fluid The filter used : Ethanol 70% Simplicity 1 part = 200 mg

So volume fluid filter 10 part for filtering first = 2000 ml

Liquid volume filter for filtering second = $2 \times 2000\text{ ml} = 1000\text{ ml}$

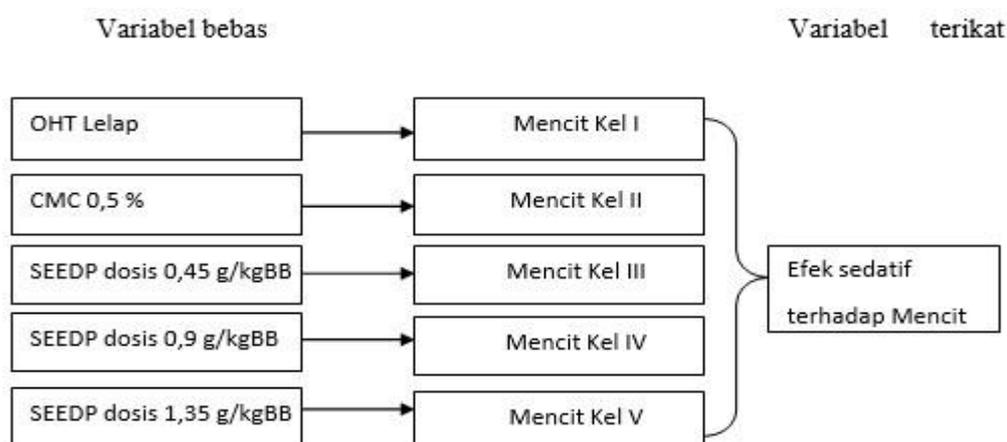
Extract leaf gotu kola in study this made by maceration based on Indonesian Herbal Pharmacopoeia Edition first year 2013. Leaves gotu kola weighed 1 part (200 grams) which already dry and has pollinated , then put in into a glass beaker and pour with 10 parts fluid filter that is as much as 2000 ml. cover the beaker glass and soak during the first 6 hours while once in a while stirred , then shut up During 18 o'clock. Separate maserate with filtration . Repeat process filtering at least one time with type the solvent that same and total volume solvent as much half time total solvent on filtering first that is as much as 1000 ml. collect the maserate . Maserat then evaporated with tool vaporizer that is Rotary Evaporator on temperature no more from 50 0 C until obtained extract thick as much 68 grams.

Making Suspension CMC 0.5%

Weigh as much 0.5 g CMC, sprinkle in mortar which filled with water hot as much 25 ml, let 15 minute until get mass which transparent , after expand then grind and dilute with a little aquadest . Then put in into the container , enough volume with aquadest until 100 ml.

Procedure work

- 1) Mice adapted laboratory During two week .
- 2) Weigh mice , note each heavy mice and give sign , place in pen which different for each treatment
- 3) Mice shared 5 group , every group consist from 3 tail mice .
- 4) Before treatment , each mice placed more formerly in the box partition for 5 minute for adaptation .
- 5) Group I is given Standardized Herbal Medicine sleep orally (control positive).
- 6) Group II given CMC 0.5% by oral (control negative).
- 7) Group III given suspension extract ethanol leaf gotu kola with dose 0.45 g/ kgBB orally .
- 8) Group IV is given suspension extract ethanol leaf gotu kola with dose 0.9 g/ kgBB orally .
- 9) V group given suspension extract ethanol leaf gotu kola with dose
- 10) 1.35 g/ kgBB by orally.
- 11) Observe use box partition and note how many time mice To do movement back and forth come back in box partition During 2.5 o'clock.



Description :

OHT : Drug Herbs Standardized

SEEDP : Suspension Extract Ethanol Leaf gotu kola

Figure 1. Skeleton Draft

3. Result and Discussion

Results

Results study test effect sedative to mice which given sleep as control positive , CMC 0.5% as control negative , Suspension extract ethanol leaf gotu kola with doses of 0.45 g/ kgBW , 0.9g/ kgBW and 1.35g/ kgBW obtained results as following :

Giving suspension deep sleep as control positive by oral on mice give effect sedation . Showed with movement the original mouse _ active To do movement back and forth in box partition , after given suspension deep sleep mice Becomes more calm down , a little move until finally asleep . This thing because deep sleep on generally used as drug sleep , so that give effect sedative-hypnotic to mice . Drug start work in body mice occurs at 10 minutes after gift suspension sound asleep . Working time from suspension deep sleep in body mice is for 140 minutes . Activity test results mice in box partition could seen on the Table 1.

Table 1 . Results Observation Test Activity Mice In Box Partition

| Treatm ent | Mice | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
|--------------------|------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| sleep | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 |
| | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4 |
| | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| CMC 0,5% | 4 | 7 | 6 | 6 | 6 | 5 | 7 | 6 | 7 | 8 | 6 | 6 | 6 | 7 | 7 | 8 |
| | 5 | 7 | 7 | 8 | 6 | 6 | 8 | 7 | 6 | 5 | 6 | 5 | 5 | 7 | 7 | 8 |
| | 6 | 7 | 6 | 8 | 7 | 7 | 6 | 8 | 5 | 6 | 7 | 6 | 5 | 7 | 7 | 7 |
| SEEDP | 7 | 6 | 4 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 5 | 5 | 6 | 7 | 7 |
| Dosage 0.45 g/kgBB | 8 | 5 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 1 | 3 | 5 | 6 | 7 | 6 | 6 |
| | 9 | 5 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 4 | 4 | 5 | 6 | 6 | 7 |
| SEEDP | 10 | 5 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 6 | 5 | 5 |

| | | | | | | | | | | | | | | | | |
|--------------------------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dosage 0.9 g/kgBB | 11 | 5 | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 5 | 6 | 6 |
| | 12 | 4 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 5 | 6 |
| SEEDP | 13 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 6 |
| Dosage 1.35 g/kgBW | 14 | 4 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 5 |
| | 15 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 5 |

Description :

1. 0 - 5 = attitude mice normal
2. 6 - 10 = attitude mice calm

Oral administration of 0.5 % CMC against mice no give effect sedative , indicated activity _ stay normal, active move . This thing because of CMC 0.5% no own effect sedative . On trial this 0.5% CMC is used as control negative , because extract ethanol leaf gotu kola dissolved in suspension CMC 0.5%. So that treatment this done for know is CMC 0.5% own effect sedative .

Giving suspension extract ethanol leaf gotu kola dose 1.35 g/ kgBB by orally cause effect sedative to mice be marked with attitude the _ again very active Becomes shut up or calm in box partition . Substance nutritious from leaf gotu kola start work in body mice happened to 10th minute after gift suspension extract ethanol leaf gotu kola 1.35 . dose g/ kgBB . Working time from suspension extract ethanol leaf gotu kola dose 1.35 g/ kgBB in the body mice is for 150 minutes . Time and activities mice in box partition could seen on the Figure 2.

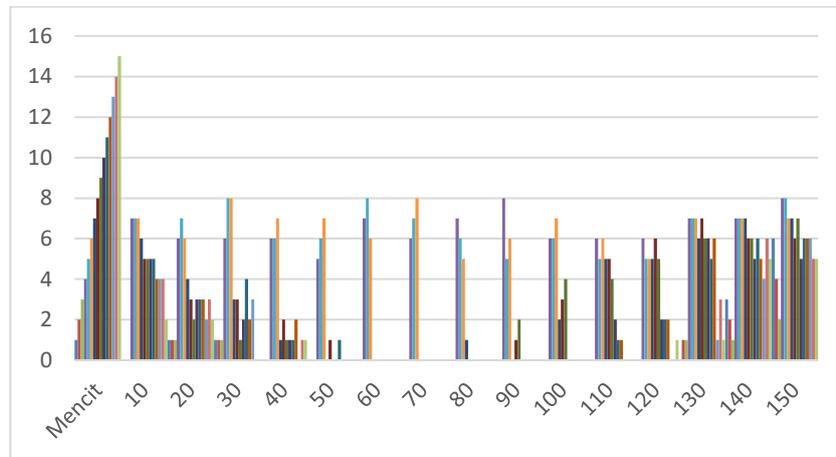


Figure 2. activity graph of mice in a partition box

Giving suspension extract ethanol leaf gotu kola dose 0.9 g/ kgBB by orally cause effect sedative to mice be marked with attitude the _ beginning active To do movement back and forth in box partition Becomes shut up or calm and no again To do movement back and forth in box partition . Substance nutritious from leaf gotu kola start work in body mice happens in minutes 10th after gift suspension extract ethanol leaf gotu kola a dose of 0.9 g/ kg body weight . Working time from suspension extract ethanol leaf gotu kola dose 0.9 g/ kgBB in the body mice is for 150 minutes .

Giving suspension extract ethanol leaf gotu kola dose 0.45 g/ kgBW by orally cause effect sedative to mice be marked with attitude the _ beginning active To do movement back and forth in box partition be silent or calm and no again To do movement back and forth in box partition . Substance nutritious from leaf gotu kola start work in body mice happens in minutes 20th after gift suspension extract ethanol leaf gotu kola a dose of 0.45 g/ kg body weight . Working time from suspension extract ethanol leaf gotu kola dose 0.45 g/ kgBW in the body mice is for 100 minutes .

Discussion

From results study there is difference activity mice in box partition on group control negative (solution CMC 0.5%) to group treatment which given extract ethanol leaf gotu kola dose terraced , on treatment group negative no show existence effect sedative of CMC 0.5% seen from activity normal and

active mice . _ Different with group control positive and group extract ethanol leaf gotu kola . On group treatment extract ethanol leaf gotu kola no show difference which significant to group control positive (Standardized Herbal Medicine Sleepy) looks from activity mice in box partition . This thing proven that extract ethanol leaf gotu kola own effect sedation in mice as case Standardized Herbal Medicine sleep . gotu kola contain triterpenoids, compound which most important from component plant this . Content triterpenoids gotu kola could revitalize vessels blood so that circulation blood to brain Becomes smooth , give effect calm and Upgrade function mental Becomes more good .

Calm down mice far different in the group treatment control positive and group extract ethanol leaf gotu kola compared to with group control negative consequences effect sedation , because decline activity motor result of process emphasis on system nerve center . Process emergence sedation involve inhibitory neurotransmitter main on the system nerve center namely GABA. group drug sedative influence GABA (Gamma Amino Butyric Acid) receptors . As case mechanism drug sedative other , arising effect sedation gotu kola involve receptors GABA in system nerve center . Content gotu kola which consist from brahmoside and brahminoside work Upgrade GABA via mechanism cholinergic .

4. Conclusion

Conclusion

There is difference which mean Among level of insomnia before gift aroma therapy and after gift aroma therapy on subject research .

Suggestion

Research _ more carry on about insomnia and elderly with involve factors which influence insomnia as disease comorbid and level stress .

References

- Department Indonesian Health , 2010 . *Indonesian Pharmacopoeia Edition III* . Jakarta.Department health RI. 1979. *Pharmacopoeia Indonesia Edition III* . Jakarta.
- Djauhariya , E and Hernabi . 2004. *weed nutritious medicine* . Spreader self-help . Jakarta.
- Goodman and Gilman. *Base Pharmacology therapy* . Edition 10. Book Medicine . Jakarta
- Ihsan, A A 2012. *Energy Hypnosleep for life more healthy and happy* . PT.BOOK WE. Jakarta.
- Kaina K. Influence Aroma therapy In your life . Yogyakarta: Grafindo Litera Media; 2006
- Lasmadiwati , E. MM Herminati and YHIndriani . 2004. *gotu kola* . Spreader self-help . Jakarta.
- Marjoni , R. 2016. *The basics Phytochemicals* . CV TRANS INFO MEDIA publisher . Jakarta Sunnara , R. 2012 . *Gathering drug traditional archipelago* . Rama Educationtama . Jakarta.
- Mengel , MB and LP Schwiebert . 2001. *Reference manual medical family* . Hippocrates . Jakarta.
- Ministry of Health RI. 2013. *Pharmacopoeia Herbs Indonesia Edition I* . Jakarta.
- Nicol, R. 1990. *Sleep quiet Without medicine* . arcan . Jakarta.
- Notoatmodjo , S. 2016. *Methodology Study Health*. PT RINEKA CREATE. Jakarta
- Team Lecturer Pharmacology Major Pharmacy . 2016. *guide Practice Pharmacology* . health polytechnic Ministry of Health Medan.

