International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

Effectiveness of Giving Putri Malu Leaf (*Mimosa pudica Linn)* and Kangkung Leaf (*Ipomoea reptans*) in Overcoming Insomnia on Pre-menapousal Women

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Abstract

Insomnia is a sleep disorder in the form of repetitive difficulty to sleep or maintain sleep with symptoms always feel tired throughout the day. Insomnia increases in women aged 44-45 years due to decrease estrogen and progesterone level in the body especially gets worse during menopause. This study was intended to know the effectiveness of giving Putri Malu leave (*Mimosa pudica Linn)* and Kankung Leave (*Ipomoea reptans)* in overcoming insomnia for pre menapouse women in Bengkulu City 2016. There were 40 pre menapouse women divided by two groups, 20 women were given boiled water of putri malu leave (*Mimosa pudica Linn)* and another 20 women were given boiled water kangkung leave (*Ipomoea reptans)*. The average length of sleep per day in pre-menopausal women who consumed Putri Malu leaf (*Mimosa pudica Linn*) had longer than women who consumed Kangkung leaf (Ipomoea reptans). The effectiveness differences among women who consumed putri malu leaf (*Mimosa pudica Linn*) were seen from day 1 to day 7 with p = 0,00. While in the group of women who consumed kangkung leaf (*Ipomoea reptans*) did not significantly approved (p> 0.05) in overcoming insomnia.

Keywords: Pre-menapouse women; Insomnia; Putri Malu Leave; and Kangkung Leave.

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1. Introduction

Insomnia is a sleep disorder especially in adults. Effective treatment of insomnia can be done with non pharmacological and pharmacological treatment modes [1]. Prevalence estimates of insomnia vary, with 30% to 43% of individuals reporting at least one nighttime insomnia symptom[2,3,4,5]. Most reports suggest prevalence rates of insomnia disorder at 5% to 15% [3,4,6,7]. Insomnia is a chronic problem in 31% to 75% of patients[1,6,7], with more than two-thirds of patients reporting symptoms for at least 1 year [8]. Increasing the age of a person will affect sleep quality in the elderly, only 7% complain about sleep problems (sleep only no more than five hours a day. Women suffer more from insomnia than men, with a ratio of 40% for women and 30% for men [9]. The risk of insomnia is likely to be greater in women due to hormonal changes. . To overcome this problem, some individuals use drugs that can speed up fall a sleep and prolong sleep (sedative-hypnotic), and these drugs have side effects and harmful to the body. Based on a 12-year study and analyzing more than 12,000 residents in Canada, the mortality rate is significantly higher and higher for sleeping pill users and those who consume drugs to reduce anxiety [10]. Putri malu leaf (*Mimosa pudica Linn*) has been identified as lajjalu in Ayurveda and has been found to have antiasthmatic, aphrodisiac, analgesic, and antidepressant properties. *M. pudica* is known to possess sedative, emetic, and tonic properties, and has been used traditionally in the treatment of various ailments including alopecia, diarrhea, dysentery, insomnia, tumor, andvarious urogenital infections [11]. Phytochemical studies on *M. pudica* have revealed the presence of alkaloids, non-protein amino acid (mimosine), flavonoids C-glycosides, sterols, terpenoids, tannins, and fatty acids [12]. In addition, *M. pudica* produced an anti-depressan like profile similar to two tricyclic anti-depressants [13]. Therefore, in the treatment of cases of insomnia during pre-menopause women this could be tried using putri malu leaf (Mimosa pudica Linn.) as a herbal therapy. While, Kangkung leaf (*Ipomoea reptans*) also has benefits for the treatment of insomnia and is acceptable for many people who like it. Kangkung leaf also known as water convovulus or water spinach or swamp-cabbage, has properties as a sedative, bleeding, and insomnia. There are two varieties of watercress (kome) replica (Ipomea reptans) which are often called kangkung china, and watercress (Ipomea aquatica) which grows naturally in rice fields, swamps, or ditches [14]. Water kangkung has reddish flowers with green stems. The nutritional value of 100 grams boiled kangkung leaf contains 91.2 ml of water, 28 kcal of energy, 1.9 gr protein, 0.4 gr fat, 5.63 gr of carbohydrate, 2 gr of fiber, and 0.87 gr of pulp. Kangkung leaf also rich in vitamins A, B, C, minerals, amino acids, calcium, phosphorus, carotene, and iron, and sitosterol. The content of kangkung leaf also has the potential to be anti-poison, anti-inflammatory, sedative (sedative) and diuretic and sedative (tranquilizers / sleeping pills). Therefore, it does not be surprised if we are easily drowsy after eating a lot with kangkung leaf menu. Kangkung leaf also known as water convovulus or water spinach or swamp-cabbage, has efficacy as a sedative, bleeding, and insomnia [15].

2. Materials and Method

The type of this research is experimental with pre and post test designed. Firts group is 20 pre-menopause women given putri malu leaf (Mimosa pudica Linn) and another group 20 pre-menopause given kangkung leaf (Ipomoea reptans). The length of sleep is measured before and after treatment which were given putri malu leaf and kangkung leaf in order to distinguish the effectiveness two of them.

2.1. Raw Materials

Local putri malu leaf (Mimosa pudica Linn) taken from the bushes which was grown wild on the edge of the forest and kangkung leaf come from our plantation that grow around the rice plant. Putri malu leaf and kangkung leaf were weighed as much as 50 grams each, then added 3 cups water and boiled separately became each 1 cup of water.

2.2. Methods

2.2.1 Experimental design

40 pre-menopause women in Bengkulu City were randomly and equally assigned into two groups. The first group was given boiled of putri malu beverage, another group was given boiled kangkung leaf beverage. Each group drank 1 glass (200 ml) a day for 7 days and was taken at night before bed (Figure 1).

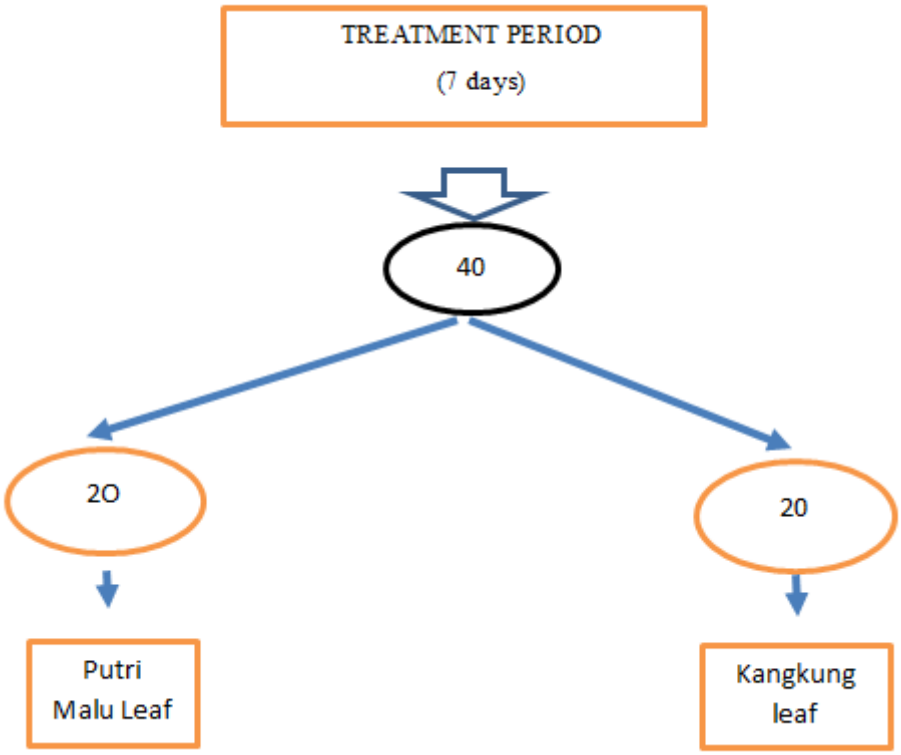

Figure 1: Treatment grouping (40 pre-menopause women were divided equally into two groups)

2.2.2. Statistical Analysis

Data processing was conducted using Microsoft Excel 2010 and SPSS 17.0 for windows. Analysis was carried out by using application of *Generalize Linear Model Repeated Measure (*GLM RM).

3. Result and Discussion

3.1. The average length of sleep per day in pre-menopausal women who drank putri malu leaf (Mimosa pudica Linn) and Kangkung leaf (Ipomoea reptans) in overcoming Insomnia in Bengkulu City

The duration of sleep in the group given boiled water putri malu leaf was longer than the group given boiled water kangkung leaf (Table 1)

Table 1: The observation of sleep duration per day for 7 days

Treatments		Mean	Std. Deviation	N
Day-1	putri malu	4.97	.985	20
	Kangkung	4.92	.724	20
	Total	4.94	.854	40
Day-2	putri malu	4.79	.974	20
	Kangkung	4.79	.690	20
	Total	4.79	.833	40
Day-3	putri malu	5.50	1.300	20
	Kangkung	5.17	.729	20
	Total	5.33	1.054	40
Day-4	putri malu	5.49	.881	20
	Kangkung	5.13	.606	20
	Total	5.31	.768	40
Day-5	putri malu	5.05	1.125	20
	Kangkung	4.98	.696	20
	Total	5.02	.924	40
Day-6	putri malu	4.85	1.073	20
	Kangkung	4.78	.728	20
	Total	4.82	.906	40
Day-7	putri malu	5.12	.890	20
	Kangkung	4.91	.645	20
	Total	5.02	.775	40

The results showed that there was a significant difference in the average duration of sleep of respondents who drank boiled putri malu leaf (p value = 0.000). The group that was given boiled water putri malu leaf to be faster to sleep compared to the previous day. This proves there was a decrease in activity on the respondents who were given boiled water of putri malu leaf. The decrease in activity suggests the presence of a preparedness suppression of a fixed stimulus which can be referred to as a sedation effect (giving serenity).

The process of sedation effect involves the major inhibitory neurotransmitter of the central nervous system, Gama Amino Butiric Acid (GABA). Hypnotic sedatives such as benzodiazepines and barbiturates affect GABA receptors in this case the subtype A (GABAA) receptor. GABA A consists of 2 α subunits, two β subunits, one γ subunit. GABA is secreted by nerve endings found in the spinal cord, cerebellum, basal ganglia, and most of the cortex that can cause sedation effects [16].

There is no prior study of this. However, it is suspected that the leaves of embarrassed daughter contain melatonin substances that can produce sedation effect (Anonymus, 2008). It has been suggested that melatonin could be useful in the treatment of insomnia related to age and deficiency in melatonin [17]. Melatonin has well-documented chronobiotic properties. Also, it has been suggested that melatonin also has hypnotic effects. Several studies have shown that the hypnotic effects of melatonin are phase dependent, being more effective when administered during daytime than at night. In this regard, it could be considered a chronohypnotic, ie, a substance that ‘‘inhibits the drive for wakefulness emanating from the circadian pacemaker during the wake-propensity phase of the cycle’’ [18]. The rate of natural melatonin decreases slowly with age. Some elderly people produce melatonin in a very small amount or do not produce at all. Melatonin and melatonin receptor agonists are currently being developed as pharmacological therapy primarily for primary insomnia. Provision of melatonin can improve the condition of insomnia without causing side effects. Physiologically melatonin has a very short half-life of 20-30 minutes. Another alternative is to use a prolonged-release melatonin or a melatonin receptor agonist agent [19].

Differences in sleep duration in the pre-menopausal mother who drank Putri Malu boiled water (Mimosa pudica Linn) and Kangkung leaf (Ipomoea reptans) boiled in overcoming Insomnia could be seen in Table 2.

This study showed that there was a significant difference between the group which was given Putri Malu boiled water and the kangkung leaf boiled water. The difference was seen from day one to day 7, in the group of Putri Malu leaf (p = 0,00) whereas in a group of kangkung leaf not seen a significant difference (p> 0,05).

The results of this study were in accordance with the results of other studies that performed post hoc test showed significant results in 3 treatment groups (kangkung leaf extract) to the negative control group (p = 0.000). There was no significant difference in the positive control group for the P1 group (p = 0.173), P2 (p = 0.236) and P3 (p = 0.997) and among the treatment groups. Nutritional content in 100 grams of kangkung leaf such as 458.00 mg of potassium and 49,00 mg of sodium. Where potassium and sodium are compounds of bromide salts. These compounds work as sleeping pills based on their properties that suppress the central nervous system. Allegedly these compounds that can cause sedative effects (tranquilizers/sleeping pills). Kangkung can provide a great relationship with the nerves of eyes.20 Ranu (2009)

Table 2: Differences in sleep duration in menopausal women who drank Putri Malu boiled water (Mimosa pudica Linn) and drank Kangkung leaf (Ipomoea reptans) boiled water in overcoming Insomnia in Bengkulu City.

Parameter Estimates

Observation	Treatments	B	Std. Error	T	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Day-1	Putri Malu	4.917	.193	25.437	.000	4.525	5.308
	Kangkung	.050	.273	.183	.856	-.503	.603
		0[a]	.	.	.	.	.
Day-2	Putri Malu	4.788	.189	25.368	.000	4.405	5.170
	Kangkung	.000	.267	.000	1.000	-.540	.540
		0[a]	.	.	.	.	.
Day-3	Putri Malu	5.167	.236	21.920	.000	4.690	5.644
	Kangkung	.333	.333	1.000	.324	-.341	1.008
		0[a]	.	.	.	.	.
Day-4	Putri Malu	5.133	.169	30.361	.000	4.791	5.476
	Kangkung	.358	.239	1.499	.142	-.126	.842
		0[a]	.	.	.	.	.
Day-5	Putri Malu	4.983	.209	23.815	.000	4.560	5.407
	Kangkung	.067	.296	.225	.823	-.532	.666
		0[a]	.	.	.	.	.
Day-6	Putri Malu	4.783	.205	23.331	.000	4.368	5.198
	Kangkung	.067	.290	.230	.819	-.520	.654
		0[a]	.	.	.	.	.
Day-7	Putri Malu	4.912	.174	28.256	.000	4.561	5.264
	Kangkung	.212	.246	.864	.393	-.285	.710
		0[a]	.	.	.	.	.

4. Conclusion

In conclusion, the average length of sleep per day in pre-menopausal women who drank Putri Malu leaf (Mimosa pudica Linn) boiled water had higher mean values compared with respondents who drank Kangkung leaf (Ipomoea reptans) boiled water. The effectiveness difference among respondents who drank Putri Malu

(Mimosa pudica Linn) boiled water was seen from day 1 to day 7 with p = 0,00. While in the kangkung leaf group (Ipomoea reptans) there was no significant difference (p> 0.05) in pre-menopausal women.

Acknowledgement

This study has received permission from Bengkulu City Health Office and Bengkulu Health Polytechnic Ministry of Health, and thank you very much to all respondents.

References

[1] Reeve, K. & Bailes, B., 2010. Insomnia in Adults: Etiology and Management. Journal for Nurse Practitioners, 6(1), pp.53–60. Available at: http://dx.doi.org/10.1016/j.nurpra.2009.09.013.

[2] Walsh JK , Coulouvrat C , Hajak G , et al . Nighttime insomnia symptoms and perceived health in the America Insomnia Survey (AIS) . Sleep . 2011 ; 34 (8): 997 - 1011 .

[3] Ohayon MM , Reynolds CF III . 2009. Epidemiological and clinical relevance of insomnia diagnosis algorithms according to the DSM-IV and the International Classifi cation of Sleep Disorders (ICSD) . Sleep Med . 2009 ; 10 (9): 952 - 960 .

[4] Morin CM , LeBlanc M , Bélanger L , Ivers H , Mérette C , Savard J. 2011. Prevalence of insomnia and its treatment in Canada . Can J Psychiatry .2011 ; 56 (9): 540 - 548 .

[6] Morin CM , Jarrin DC. 2013. Epidemiology of insomnia: prevalence, course, risk factors, and public health burden . Sleep Med Clin . 2013;8 (3): 281 - 297 .

[7] Morin CM , Benca R .2012. Chronic insomnia . Lancet . 2012 ; 379 (9821):1129 - 1141 .

[8] Morin CM , LeBlanc M , Daley M , Gregoire JP , Mérette C.2006. Epidemiology of insomnia: prevalence, self-help treatments, consultations, and determinants of help-seeking behaviors . Sleep Med . 2006 ; 7 (2):123 - 130 .

[9] Reeve, K. & Bailes, B., 2010. Insomnia in Adults: Etiology and Management. Journal for Nurse Practitioners, 6(1), pp.53–60. Available at: http://dx.doi.org/10.1016/j.nurpra.2009.09.013.

[10] Anonymous (2010) Available from URL: http://dechacare.com/Bahaya-Jangka-Panjang-Obat-Tidur-I981-1.htm

[11] Hafsa Ahmad, Sakshi Sehgal, Anurag Mishra, Rajiv Gupt. 2012. Mimosa pudica L. (Laajvanti): An overview. Pharmacognosy Reviews July-December 2012 Vol 6 Issue 12

[12] Genest S, Kerr C, Shah A, Rahman MM, Saif-E-Naser GM, Nigam P, et al. 2008.Comparative bioactivity of two Mimosa species. Lat Am Caribb Bull Med Aromat Plants 2008;7:38-43.

[13]. Molina M, Contreras CM, Tellez AP.1999. Mimosa pudica may possess antidepressant actions in the rat. Phytomedicine 1999;6:319-23.

[14] Epstein et al., 2012. Insomnia treatment acceptability and preferences of male Iraq and Afghanistan combat Veterans and their healthcare providers. , 49(6), pp.867–878.

[15] Dalimartha, S, 2003. Atlas Tumbuhan Obat Indonesia, Jilid 2. Trubus Agriwidya, Jakarta

[16] Trevor AJ, Way WL. 2002. Obat sedatif-hipnotik. Dalam: Katzung BG. Farmakologi dasar dan klinik. Edisi 8. Jakarta: Salemba Medika, 2002:21-53

[17] Zhdanova IV.2005. Melatonin as a hypnotic: pro.Sleep Med Rev 2005;9:51–65.

[18] Scheer FA, Cajochen C, Turek FW, et al. 2005.Melatonin in the regulation of sleep and circadian rhythms. In: Kryger MH, Roth T, Dement WC, editors. Principles and practice of sleep medicine. 4th edition. Philadelphia: Elsevier Saunders; 2005. p. 395–404.

[19] Luh, N. et al., 2013. Melatonin Dan Melatonin Receptor Agonist. , pp.1–14.

[20] Ranu A 2009. Pengaruh Ekstrak Kangkung Darat (Ipomea Reptans Poir)Terhadap Efek Sedasi Pada Mencit Balb/C, Medical Faculty- Diponegoro University