



The Effect of Valerian Root Extract on Reducing Dysmenorrhea Pain Levels and Endorphin Hormone Levels in Women of Childbearing Age

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ARTICLE INFO

Keywords:

Dysmenorrhea
Menstrual pain
Teenager
Valerian root

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The author has reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/amcr.v4i4.350>

ABSTRACT

Dysmenorrhea is pain in the stomach that interferes with activities. The incidence of dysmenorrhea is 64.25% of the total number of fertile women. Dysmenorrhea causes complaints of weakness, to anxiety due to severe cramps. Dysmenorrhea treatment can be carried out non-pharmacologically with valerian root extract which can have a relaxing effect on the central nervous system, reduce stress and anxiety, and improve sleep quality. This study aimed to analyze the effect of valerian root extract on dysmenorrhea pain levels and endorphins levels in women of childbearing age. This study used an experimental design with a pretest posttest randomized control group design. Sampling using simple sampling technique was divided into 2 groups to measure the intensity of menstrual pain. The intervention group 18 people were given valerian root extract and the control group 18 people were given standard drugs for the treatment of dysmenorrhea. Giving valerian root extract 100 mg was effective in reducing the level of dysmenorrhea pain, $p < 0.05$. Endorphin levels in the intervention group differed from the control group by, $p < 0.05$. Giving valerian root extract is effective in reducing dysmenorrhea pain and increasing endorphins in women of childbearing age.

1. Introduction

In everyday life, many women experience an unpleasant medical condition called dysmenorrhea. Dysmenorrhea, or menstrual pain, is a common symptom experienced by most women during their menstrual periods. This pain is often quite intense and can interfere with daily activities and quality of life. Therefore, effective treatment to reduce dysmenorrhea pain is highly expected. Basically, dysmenorrhea occurs due to excessive uterine contractions caused by the release of prostaglandins. One of the natural approaches that has become a concern in dealing with dysmenorrhea pain is the use of Valerian Root extract. Valerian Root has been used traditionally in herbal medicine to treat a variety of health problems,

including sleep and anxiety disorders. Valerian root (*Valeriana officinalis*) contains a variety of chemical compounds that are known to have potential pharmacological effects, especially in the context of herbal use for sleep disorders, anxiety, and pain.¹⁻⁵

In addition, in the context of pain treatment, increasing the production of endorphins has also become a significant research focus. Endorphins are the body's natural hormones that play a role in reducing pain and increasing feelings of well-being. Therefore, further understanding of the effect of valerian root extract on endorphin levels in women of childbearing age with dysmenorrhea can provide valuable insights in efforts to manage this pain effectively.⁶⁻⁹ This study aimed to investigate the effect



of using valerian root extract on reducing levels of dysmenorrhea pain and endorphin hormone levels in women of childbearing age.

2. Methods

This study is an experimental study with a post-test approach with a control group design. A total of 36 research subjects were included in this study, where the research subjects were grouped into 2 groups, namely the treatment group and the control group. A total of 18 research subjects who were women of childbearing age and were given intervention with 100 mg of valerian root extract were the treatment group. Meanwhile, as many as 18 research subjects were women of childbearing age and received standard drugs for dysmenorrhea pain as the control group. The valerian root preparation used in this study is a product that has obtained permission from the Food and Drug Monitoring Agency (BPOM).

Dysmenorrhea pain assessment was carried out using a visual analog scale (VAS) to assess pain threshold. Meanwhile, the assessment of endorphin hormone levels was carried out using the enzyme-linked immunosorbent assay (ELISA) technique. Data analysis was carried out using SPSS version 25 software to assess differences in pain threshold and

endorphin hormone levels between groups. Univariate analysis was performed to present the frequency distribution of data from each test variable and bivariate analysis was performed to determine differences in the mean pain score and the average endorphin levels between groups, $p < 0.05$.

3. Results and Discussion

Table 1 presents a comparison of pain intensity and endorphin hormone levels between groups. Administration of valerian root extract showed the potential to reduce pain intensity statistically significantly, $p < 0.05$. Similar results were also shown in the control group, where administration of standard pain medications reduced pain intensity statistically significantly, $p < 0.05$. Administration of valerian root extract showed the potential to increase endorphin hormone levels statistically significantly, $p < 0.05$. Similar results were also shown in the control group, where administration of standard pain medications increased endorphin hormone levels statistically significantly, $p < 0.05$. The results of this study indicate that the administration of valerian root extract is effective in reducing dysmenorrhea pain by increasing endorphins.

Table 1. Comparison of pain and endorphin hormones between groups.

Variable	Treatment group			Control group			P-value**
	Pre	Post	P-value*	Pre	Post	P-value*	
Pain	5,67±1,23	1,28±0,89	0,000	4,83±1,09	2,11±0,78	0,000	0,000
Endorphin hormone levels	444±201	600±250	0,000	292±196	512±243	0,000	0,000

*Dependent t-test, $p < 0,05$.

**Independent t-test, $p < 0,05$.

Endorphins are one of several neurotransmitters and peptides that play an important role in relieving pain in the human body. They are often called endogenous analgesia because they function as natural pain relievers. Endorphins interact with opioid receptors scattered throughout the central nervous

system and peripheral nervous system. This includes receptors such as μ (mu), δ (delta), and κ (kappa) receptors. When endorphins bind to these receptors, they block the transmission of pain signals and reduce the perception of pain. Endorphins can also inhibit the release of neurotransmitters involved in transmitting



pain signals, such as substance P. By reducing the release of these neurotransmitters. Endorphins can reduce the activity of the nerves that send pain messages to the brain. In addition to reducing pain, endorphins are also known to induce feelings of well-being or euphoria. This is the reason they are often associated with the positive feelings that occur during and after intense exercise (known as a "runner's high") and in other positive situations. These positive feelings can help distract from the pain. Endorphins may also play a role in reducing stress and anxiety. Stressful conditions can amplify the perception of pain, and endorphins can help counter this effect by reducing the stress response.¹⁰⁻¹⁵

Valerenic acid is the main compound thought to be responsible for the calming and relaxing effects of valerian root. Valerenic acid can interact with GABA (gamma-aminobutyric acid) receptors in the brain, leading to a decrease in nervous activity and a sense of well-being. GABA plays a role in inhibiting nerve activity by binding to GABA receptors in nerve cells. Nervous overactivity can trigger the release of proinflammatory chemicals, such as cytokines, which play a role in inflammation. By reducing nerve activity, GABA can inhibit the release of these cytokines and ultimately reduce inflammation. GABA has a calming effect on the nervous system. When stressed or anxious, the body can respond by releasing substances that trigger inflammation. GABA can help relieve stress and anxiety, which in turn can reduce the inflammatory response. Although it does not directly reduce pain, GABA can influence pain perception. In some situations, chronic stress or nervous tension can increase sensitivity to pain. By relieving stress and calming the nervous system, GABA can help reduce the perception of pain.¹⁶⁻²⁰

4. Conclusion

Giving valerian root extract is effective in reducing dysmenorrhea pain through increasing endorphins.

5. References

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