

## **The Effect of Andaliman Oil on Low Back Pain in Third Trimester Pregnant Women**

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### **ABSTRACT**

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Nearly 70% of expectant mothers experience back pain, which makes it difficult for them to do daily tasks, including sleeping. This study sought to determine how Andaliman Oil affected third-trimester pregnant women's low back pain. Using a one-group pretest-posttest design, which is a pre-experimental with a pre-test (taken before treatment) and post-test (taken after treatment) in one group, this research approach employs quasi-experiments. Third Trimester Pregnant Women with back and waist pain made up the study's sample. The Modified Oswestry Low Back (ODI) is the tool used to evaluate back discomfort. The application of andaliman oil is carried out by continually applying it to the mother's back and waist until the respondent has the sensation for fifteen minutes. After that, the mother is given a post-instrument to gauge the impact of andaliman oil on her pain levels. According to the findings of statistical testing, there was a decrease in back pain and a decrease in dysmenorrhea, with an average of 15.50. Additionally, a significant difference between the pre- and post-intervention periods is indicated by a p-value of less than 0.05. Additionally, the Z min value = -0.632 is found, indicating that longer and more frequent use of andaliman oil can lessen back discomfort in pregnant women in Third Trimester.

**Keywords:** *Andaliman Oil; Low back pain; Third Trimester Pregnancy; Analgesic; Complementary*

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## **1. INTRODUCTION**

Pregnancy back pain refers to the type of back pain that appears during pregnancy, and the person has no previous history of back pain (1). Pregnancy back pain is one of the most common musculoskeletal pains that most women experience for the first time during pregnancy and can cause many problems and disability for pregnant women (2). Nearly 70% of pregnant women suffer from back pain during pregnancy, and many of these pregnant women, experience severe back pain that makes them unable to perform their daily activities and also causes rest disturbances (3). According to reports, back pain is quite common in pregnant women generally. The global prevalence of back pain during pregnancy was 40.5 (95% CI: 33-48.4), according to the meta-analysis. Furthermore, the meta-analysis found that the prevalence of back pain worldwide was 28.3 (95% CI: 10.5-57.1) in the first trimester, 36.8 (95% CI: 30.4-43.7) in the second trimester, and 47.8 (95% CI: 37.2-58.6) in the third trimester. This back pain is more common in the second trimester of pregnancy, but in some cases, back pain during pregnancy can occur from the first trimester (4).

Back pain usually begins between the fifth and seventh month of pregnancy, and pregnancy-related back pain may continue for up to three months after delivery. In addition, women who experienced back pain before pregnancy are twice as likely to suffer from this condition; the frequency of back pain increases with the person's age at the time of pregnancy and the number of pregnancies (5). One condition that makes women prone to back pain is pregnancy (6). Pregnancy causes changes in a person's physical state, decreases the ability to bear weight and heavy loads, and increases complaints of muscle and bone pain (7). During pregnancy, the mother's weight increases by an average of 11 to 12 kg, and hormonal and biomechanical changes in the mother's body make her vulnerable to various musculoskeletal problems, such as back pain, pelvic pain, sciatica pain, coccyx pain, carpal tunnel syndrome, and restless leg syndrome (8). Treatment of back pain during pregnancy depends on gestational

age, underlying causes, aggravating factors, and the presence of other medical conditions. The management approach usually includes treatment from an obstetrician, orthopedic specialist, neurologist, and/or neurosurgeon.

Andaliman oil is a processing of andaliaman fruit seeds with a combination of virgin coconut oil. Where andaliman oil has content whose benefits have been scientifically researched. Currently, andaliman is calculated into aromatic compounds and essential oils. By knowing the anti-microbial activity of andaliman essential oil and its active components, the utilization of andaliman can be increased as a medicinal material [8].

Maintaining optimal levels of function throughout pregnancy and minimizing discomfort are the primary goals of back pain treatment during pregnancy (9). Previous research into treatment options and management may include postural correction, sideways sleep support, lumbar movement while sitting, limiting standing and walking, and antenatal exercises (10). Andaliman (*Zanthoxylumacanthopodium* DC.), is a shrub from the Rutaceae family that is commonly found in North Sumatra, and its fruit is widely used as a traditional seasoning by the Batak tribe (11). The andaliman fruit contains polyphenolic compounds, monoterpenes and sesquiterpenes, and quinones. In addition, andaliman also contains essential oils such as geraniol, linalool, cineol, and citronellal which cause a combination of mint and lemon odors (12). Based on the background above, the researcher is interested in taking the title of research related to the Effect of Andaliman Oil on Low back pain in Third Trimester Pregnant Women The purpose of this study was to see the effect of Andaliman Oil on Low back pain in Pregnant Women Third Trimester

## 2. METHOD

This research method uses quasi-experimentation using onegroup pretest-posttest design. One-Group Pretest-Posttest Design is a type of quasi-experimental method in which there is only one research group measured before and after treatment (17). This study looked at the effect of Andaliman Oil on Low back pain in third trimester pregnant women before and after the intervention. The sample used was third trimester pregnant women who experienced back pain as many as 40 selected by purposive sampling. Inclusion criteria are pregnant women who experience back pain in the third trimester of pregnancy. Exclusion criteria are pregnant women experiencing back pain who have complications / pathologies in pregnancy. The andaliman oil was applied to the pain site. Then the pain level was assessed before and after the application of oil. This study was conducted on third trimester pregnant women who experienced back pain in the Botania Health Center Working Area. Data collection techniques in this study used various techniques, namely interviews, observation and documentation. The application of andaliman oil is carried out by continually applying it to the mother's back and waist until the respondent has the sensation for fifteen minutes. After that, the mother is given a post-instrument to gauge the impact of andaliman oil on her pain levels. The level of back pain was assessed with Modified Oswestry Low Back (ODI). The ODI is a line consisting of three to five descriptive words arranged at equal distances along the line. The questionnaire is randomly distributed to respondents who meet these requirements to describe pain (18). The ODI Tool's statement items allow clients to select a category for 0-20% Minimal Disability: 20-40% Moderate Disability: 40-60% Severe Disability: 60-80% Paralyzed: 80-100%. Bivariate data analysis, data testing was carried out using the t-dependent test statistical test, namely comparing data before and after andaliman oil was given, and the mean difference was obtained.

## 3. RESULTS AND DISCUSSION

### 3.1. Result

**Table 1. Normality Test Effect of Andaliman Oil on Low Back Pain In Third Trimester Pregnant Women (n= 30)**

	Statistik	P value
Pre-Test	0,644	0,000
Post-Test	0,521	0,000

From the table above, it can be seen that after the Shapiro-Wilk normality test was carried out on the pre and post systole diastole blood pressure values, a significant value of  $p > 0.05$  was obtained. The significant value of pre  $p > 0.05$  (0.644) and pre  $p > 0.05$  (0.521). Then the distribution of data used is not normal data so that the analysis test uses the non-parametric wilcoxon test.

**Table 2. Analysis Of The Results Of Differences In The Effect Of Andaliman Oil on Low back pain in Third Trimester Pregnant Women with the Wilcoxon test.**

	Nyeri Punggung Pre	Nyeri Punggung post
Z	-5.007	
Sig.(2-tailed)	0,000	

It is known from the 30 respondents in the table above, all patients experienced a decrease in back pain and after being given andaliman oil. In the distribution table, the level of back pain is obtained, the results of  $z$  count =  $0.001 > z$  table =  $0.000$ , which means  $H_0$  is rejected and  $H_a$  is accepted, it is stated that "There is an effect of andaliman oil on reducing back pain in pregnant women in Third Trimester" is accepted while the hypothesis is rejected and reinforced by  $p$   $0.005 < 0.05$ .

### 3.2 Discussion

In late pregnancy, the weight of the enlarged uterus can impact the ligaments that support the uterus, causing discomfort and sensations in the abdominal region. Back pain, sciatica and pubic pain can be reduced by limiting physical activity, changes in posture, wearing low-heeled shoes, using supportive pillows, the use of warm and some complementary therapies or physiotherapy (21). 90% of low back pain is caused by pinching or irritation of a nerve that runs from the spinal cord through the spine's bones. The patient experiences low back discomfort as a result of the back muscles tensing up. The severity of the condition and the cause of the nerve irritation will determine how to resolve this issue. It has been reported that andaliman has positive health effects. According to research, andaliman has a number of useful qualities, such as antibacterial and antioxidant activity, anti-inflammatory, anti-aging and anti-acne, and anti-halitosis benefits [20].

Andaliman (*Zanthoxylum acanthopodium*) is one type of spice that is widely used by ethnic Batak in food processing, especially fish and meat, andaliman is rich in essential oils. The results showed that the yield of andaliman fruit powder extract contained 8.01% essential oil. Essential oils are widely recognized for their calming effects and can reduce stress. The use of essential oils as pain relievers can be done through several effective ways. The most common is topical use, where essential oils are applied directly on the painful area. The use of andaliman oil mixed with coconut oil anticipates the pure essential oil to have a strong influence and cause skin irritation [21].

Essential oils have shown several beneficial properties, many of which are related to the treatment of neurological diseases, mood disorders, and pain. Accumulating evidence suggests a potential benefit of essential oils in the treatment of pain in fragile patients for whom some medications may become more harmful, for example in aging or chronic neurological diseases such as dementia (19).

Increased levels of estrogen, and another hormone called 'relaxin', relaxes connective tissue, joints, cartilage and ligaments, leading to greater mobility and flexibility in the joints. Relaxation of the sacro-iliac joints, caused by the release of relaxin and progesterone, can cause low back pain radiating down the legs. It can also affect the symphysis pubis (pubic) joint, which can affect mobility and sometimes cause severe pain (19).

Essential oils work on pain and inflammation through intricate, multifaceted processes that include several bodily systems and pathways. By modulating both the central and peripheral nervous systems, essential oils have the ability to alter the neurological system and impact how pain signals are perceived and transmitted. Additionally, essential oils control the immunological system, which in turn influences the inflammatory response that the immune system mediates. Additionally, essential oils change the endocrine system, impacting the hormonal equilibrium that the endocrine system regulates. Hormones like cortisol, adrenaline, noradrenaline, melatonin, and endorphins can all be impacted by their release and activity [21].

An increasingly common and successful method of pain management is the use of essential oils for back pain. Knowing which essential oils are best for treating various forms of back pain is critical because there is a large selection of them available, each with special qualities. The therapeutic effects of essential oils can provide relief to physiological and emotional disturbances during pregnancy, aiding relaxation and thus reducing the perception of pain during labor, potentially relieving pain and soreness after birth (22).

### CONCLUSIONS

The study demonstrates that the application of Andaliman oil significantly reduces low back pain in third-trimester pregnant women. With nearly 70% of expectant mothers experiencing back pain, this research highlights the potential of Andaliman oil as a safe and effective complementary therapy. The findings indicate a notable improvement in pain levels post-treatment, supported by statistical evidence showing a significant difference between pre- and post-intervention assessments.

The use of Andaliman oil, known for its anti-inflammatory and analgesic properties, provides an alternative pain management strategy during pregnancy. This approach not only alleviates discomfort but also enhances the overall quality of life for pregnant women. Given the hormonal and physical changes occurring during pregnancy, integrating natural remedies like Andaliman oil into pain management protocols could be beneficial. Future studies are encouraged to explore long-term effects and further validate the efficacy of Andaliman oil in diverse populations of pregnant women.

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