



ORIGINAL ARTICLE

The Effectiveness of Red Piper Crocatum as a Natural Antiseptic in Reducing Fluor Albus Symptoms in Women of Reproductive Age

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ABSTRACT

Background & Aim: One of the most common reproductive health issues experienced by women is Fluor Albus (vaginal discharge). In general, women with fluor albus produce excessive mucus accompanied by an unpleasant odor. This study aims to analyze the effect of boiled Red Piper crocatum as a natural antiseptic on the reduction of Fluor Albus symptoms in women of reproductive age in Sidodadi Village, Sukosewu Subdistrict, Bojonegoro Regency.

Methods: This research employed a pre-experimental design method, utilizing a one-group pre-test and post-test approach. The population consisted of 32 respondents, all of whom were included in the sample using a total sampling technique. Data were analyzed using a paired t-test. The results showed a p-value of 0.000, indicating that $p < 0.05$, and therefore, the alternative hypothesis (H_1) was accepted.

Result: This means that boiled Piper Crocatum significantly reduces Fluor Albus symptoms in women of reproductive age in Sidodadi Village, Sukosewu Subdistrict, Bojonegoro Regency.

Conclusion: Conclusion of this study Maintaining the normal flora of the vagina can be supported by using boiled Red Piper Crocatum water to reduce pathological vaginal discharge symptoms, due to its clinically proven active compounds.

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Introduction

Reproductive health is a state of complete physical, mental, and social well-being, encompassing not only the absence of disease or physical disability, but also all matters related to the reproductive system and its functions and processes (1). Women often face various issues in the vaginal area. Most cases involve problems related to fluor albus. Fluor albus itself varies in consistency, color, and odor. Generally, women experiencing fluor albus produce excessive mucus and may have an unpleasant odor (2).

The signs and symptoms of fluor albus are caused by inflammation and infection in the vaginal area. Persistent fluor albus that does not improve with medication should raise concerns about the possibility of cervical cancer (3). People worldwide, including Indonesia, are increasingly prioritizing the use of natural remedies (back to nature). The utilization of herbal medicine is widely discussed, including its benefits and efficacy. One of the plants that can be utilized is red piper crocatum (4).

The Maternal Disease Obstetric Caribbean (MDOC) in America states that fluor albus is experienced by 72.3% of women of childbearing age and 27.7% of couples of reproductive age (PUS). The WHO reports that 75% of women worldwide have experienced fluor albus, while in Europe, the figure is 25%. In Indonesia, about 90% of women are at risk of experiencing fluor albus. This is because Indonesia is a tropical climate region, which allows fungi to thrive and leads to many fluor albus cases. Symptoms of fluor albus are also experienced by adolescent girls aged 15-24 years, accounting for about 31.8% (5). At the Sukosewu Health Center in 2021, there were 54 patients with fluor albus, while in 2022, there were 61 patients. This indicates increased fluor albus patients (6).

Red piper crocatum is one of the potential medicinal plants that is empirically known to have properties for healing various types of diseases, including fluor albus. Red betel leaves contain phytochemical compounds, including essential oils. This plant is commonly found in Indonesia as a herbal remedy. Red piper crocatum has antifungal properties, necessary for inhibiting pathogenic bacteria (7). Additionally, red Piper crocatum has higher antimicrobial and antiseptic content than green betel leaves, and it also contains carvacrol, which functions as an antiseptic to maintain oral health, treat fluor albus, and eliminate unpleasant odors (8). In 2020, it was estimated that 75% of

women in Indonesia would experience fluor albus, and this number is expected to continue to rise in the following years. Research in East Java shows that 75% suffer from fluor albus, with 45% experiencing it more than once in their lifetime (9).

The leading causes of fluor albus are infections from bacteria such as *Trichomonas Vaginalis* and *Candida Albicans*. Fluor albus itself is characterized by excessive vaginal discharge that is not menstrual blood (10). Generally, fluor albus can be caused by several factors, including a lack of attention to personal hygiene, washing the genital area incorrectly, engaging in very strenuous physical activity, not changing sanitary pads promptly during menstruation, unhealthy lifestyle patterns, severe psychological stress, excessive use of feminine hygiene soaps, humid weather conditions, hormonal imbalances, and frequently scratching the genital area. These conditions can damage the internal reproductive organs and may also lead to infertility. Therefore, maintaining personal hygiene is crucial to prevent fluor albus (3).

Fluor albus can be addressed in various ways, starting with personal hygiene practices, using cotton or moisture-absorbing underwear, maintaining a healthy diet, getting adequate rest, exercising regularly, and avoiding stress. Fluor albus can be treated with pharmacological medications such as fluconazole and metronidazole (1). However, treatment is not limited to pharmacological methods; non-pharmacological treatments can also be performed using red piper crocatum. The boiled water from red piper crocatum can be used in the intimate area by being applied once a day (11).

From the various research findings and preliminary surveys mentioned above, it can be concluded that fluor albus should be treated if it becomes abnormal, and the use of red piper crocatum can be considered for addressing leukorrhea in women of childbearing age as a natural antiseptic.

Methods

This study uses a pre-experimental research design with a one-group pre-test post-test design method. The population in this study consists of women of childbearing age experiencing fluor albus in Sidodadi Village, totaling 32 women of childbearing age. The sample size determination in this study aims to test the hypothesis regarding the odds ratio. Thus, the sample size is set at 32 respondents. The sampling technique used in this study is Non-Probability Sampling with a Total

Sampling method. The sample selection is based on inclusion criteria, namely, women of childbearing age who experience fluor albus, are willing to be respondents, and patients with pathological fluor albus. The independent variable in this study is red piper crocatum, while the dependent variable is fluor albus in women of childbearing age. Data analysis is conducted through univariate analysis to determine the percentage of each variable and bivariate analysis using the dependent T-test (paired), with the test results indicating $p < 0.05$, thus H1 is accepted with a confidence level or confidence interval of 95%.

Results

Fluor Albus before giving the red piper crocatum

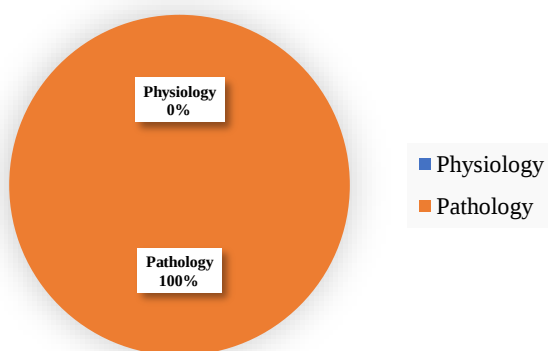


Diagram 1. Frequency distribution of fluor albus before giving of red piper crocatum in women of childbearing age

The data from Diagram 1 show that the respondents experiencing fluor albus before being given red piper crocatum predominantly suffered from pathological fluor albus. A total of 32 respondents accounted for 100% of the sample.

Fluor Albus after being given the red piper crocatum

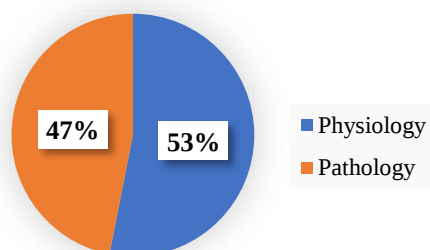


Diagram 2. Frequency distribution of fluor albus after given of red piper crocatum in women of childbearing age

The data from Diagram 2 shows that after being given red piper crocatum, more than half of the respondents experienced reduced symptoms of pathological fluor albus. Seventeen respondents, accounting for 53.1% of the sample, were classified as having physiological fluor albus.

Table 1. The effectiveness of boiled red piper crocatum as a natural antiseptic in reducing symptoms of fluor albus in women of childbearing age

Fluor Albus	age			
	Before giving red piper crocatum		After being given red piper crocatum	
	N	Percentage (%)	N	Percentage (%)
Physiology	0	0	17	53,1
Pathology	32	100	15	46,9
Total	32	100	32	100

Value of $\alpha = < 0,05$, Value of $\rho = 0,000$

Discussion

Identification of Fluor Albus Before Administration of Red Piper Crocatum

Based on Diagram 1, it can be interpreted that the majority (100%) of women of childbearing age experienced pathological fluor albus before being given boiled red piper crocatum water, with a total of 32 respondents. There were no respondents (0%) who experienced physiological fluor albus. The study's results on women of childbearing age in Sidodadi Village, Sukosewu District, Bojonegoro, before giving boiled red piper crocatum water showed a mean value of 1.00.

Several studies have identified factors contributing to this condition, including occupation, contraceptive use, and vulvar hygiene. In this study, the most prominent factor was the use of contraceptives, with a significant value of $\rho = 0.001$, indicating that women of childbearing age using hormonal contraceptives have a 60 times higher chance of experiencing fluor albus compared to those using non-hormonal contraceptives. Thus, it can be concluded that contraceptive use is a risk factor for fluor albus (12). Meanwhile, in the study by Wardani & Sundayani (2021) Factors influencing fluor albus included age, education, menstrual cycle, marital status, knowledge, and behavior. However, the menstrual cycle was the most significant factor,

with a value of $\rho = 0.000$. Each menstrual cycle causes changes in the vaginal, cervical, and uterine tissues due to estrogen, leading to the secretion of somewhat sticky and smooth mucus, which marks the interval between menstruations. In the vagina, this mucus is processed with the help of bacteria that usually reside there to produce weak acid. This acid prevents harmful bacteria from growing in the vagina. Vaginal cells and mucus from the cervix contribute to the amount of fluor albus produced. Pathological fluor albus arises due to certain medical conditions, most commonly caused by infections from parasites/fungi/bacteria (14).

Fluor albus should not be considered a trivial matter, as inadequate management of fluor albus can lead not only to infertility or ectopic pregnancy but can also be an early sign of cervical cancer, which can result in death if not consulted with health professionals early through health promotion efforts. This can increase the knowledge of women of childbearing age regarding fluor albus, thereby preventing the occurrence of pathological fluor albus (15).

Identification of Fluor Albus After Being Given Red Piper Crocatum

Diagram 2 shows that more than half (53.1%) of women of childbearing age experienced reduced symptoms of pathological fluor albus after being given boiled red piper crocatum water, resulting in 17 respondents classified as having physiological fluor albus. Meanwhile, nearly half (46.9%) of women of childbearing age still experienced pathological fluor albus, totaling 15 respondents. The study's results on women of childbearing age in Sidodadi Village, Sukosewu District, Bojonegoro, after being given boiled red piper crocatum water, showed a mean value of 1.53.

This study aligns with Dewi (2020) Regarding using boiled red piper crocatum and green piper betle water on women of childbearing age who are experiencing fluor albus. Red piper crocatum used as a traditional medicine showed that pathological fluor albus in this study could either heal or show a reduction in physiological and pathological fluor albus symptoms from this traditional medicine group, with significant results ($\rho=0.001$). Therefore, after using boiled red piper crocatum water and boiled green piper betle water, it can be concluded that both reduce fluor albus symptoms. The properties and benefits of red piper crocatum and green piper betle are used to minimize fluor albus and maintain women's health, as both contain alkaloids, tannins, saponins, and flavonoids that have antimicrobial properties capable of killing

Candida albicans, the main cause of fluor albus. Similarly, Firmanila et al. (2016) Showed that boiled red piper crocatum water significantly affected the reduction of leukorrhea in women, with a p-value of 0.001. This indicates a decrease in symptoms of pathological fluor albus in women, due to the clinically proven content of red piper crocatum in addressing fluor albus.

Pathological fluor albus is one indication of various diseases such as vaginitis, candidiasis, and trichomoniasis, which are symptoms of sexually transmitted diseases (STDs), especially in women who have changed sexual partners. Fluor albus can also indicate an infection in the pelvic cavity, such as an infection in the fallopian tubes, accompanied by severe abdominal pain. Abnormal fluor albus that is not adequately managed and persists for a long time can lead to reproductive tract infections and may cause infertility (18).

Effectiveness of Red Piper Crocatum as a Natural Antiseptic in Reducing Symptoms of Fluor Albus in Women of Childbearing Age

Based on Table 1, the effect of boiled red piper crocatum water on the reduction of fluor albus symptoms in WUS can be interpreted as follows: the majority of respondents in Sidodadi Village, Sukosewu District, experienced symptoms of pathological fluor albus, with a total of 32 (100%) respondents before being given red piper crocatum. There were no respondents (0%) who experienced physiological fluor albus. After the administration of red piper crocatum in Sidodadi Village, nearly half of the respondents who experienced symptoms of pathological fluor albus showed improvement, with 15 (46.9%) respondents, while those who experienced physiological fluor albus increased to 17 (53.1%) respondents. The study's results on women of childbearing age in Sidodadi Village, Sukosewu District, Bojonegoro Regency, after the boiled red piper crocatum water showed a mean value of 1.53.

Data analysis in this study used the T-test with SPSS software on a computer, with a significance level of 5%. A p-value of 0.000 was obtained, where $p\text{-value} < 0.05$, indicating that H_0 is rejected and H_1 is accepted. This means red piper crocatum is effective as a natural antiseptic in reducing symptoms of fluor albus in women of childbearing age in Sidodadi Village, Sukosewu District, Bojonegoro Regency.

This is in line with the study by Passe et al. (2021), which used the McNemar statistical test and obtained a result of $\rho=0.008$, indicating that $\alpha < 0.05$. Among 30 respondents who reported fluor

albus, after the administration of boiled red piper crocatum water, 27 respondents no longer experienced fluor albus. Therefore, boiled red piper crocatum has an effect on fluor albus in women of childbearing age.

The study by Kurniawati et al. (2014) Used a completely randomized design (CRD) with a factorial pattern, involving two factors: a combination of boiled green piper betle and red piper crocatum, with sterile aquades as a negative control. The observed variable was the growth of colonies in each treatment combination, showing that red piper crocatum has high antimicrobial activity, as evidenced by the absence of colony growth after treatment. Red Piper Crocatum contains essential oils with antifungal properties against *Candida albicans*, similar to green piper betle, which can function as antifungal and bactericidal agents.

The use of red piper crocatum can reduce issues related to fluor albus, making it a viable herbal treatment derived from plants and pure natural ingredients that have no side effects, with a much lower risk compared to synthetic chemical drugs (20). Additionally, maintaining personal hygiene of the female genital area in a clean and dry state is essential. Overuse of antiseptics for rinsing or washing the vagina can prevent beneficial *Lactobacillus* bacteria from effectively preventing harmful bacteria from entering the vagina (21). Therefore, to maintain normal vaginal flora, the researcher used boiled red piper crocatum water for cleansing to reduce symptoms of pathological fluor albus, due to the clinically proven content of red betel leaves in addressing fluor albus.

Conclusion

The study's results indicate that red piper crocatum is effective as a natural antiseptic in reducing symptoms of fluor albus in women of childbearing age, with a p-value of $p = 0.008$, which indicates that $\alpha < 0.05$. Among 30 respondents who reported fluor albus, after the administration of boiled red piper crocatum, 27 respondents experienced a significant reduction in symptoms of pathological fluor albus in Sidodadi Village, Sukosewu District, Bojonegoro Regency.

Conflict of Interest

No conflict of interest in this study

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