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## The Effect of Sidr (*Ziziphus spina-christi*) Leaves Decoction to Overcome of Fluor Albus

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### ABSTRACT

Sidr leaves can be used for bathing by women who have completed their menstruation (HR. Muslim no. 500). This is because sidr leaves have alkaloids, saponins, flavonoids, steroids, and tannins compounds which function as antibacterial and anti-fungal. Fluor albus is a disease caused by the fungus *Candida albicans*. We aimed to determine the effect of sidr leaf decoction to overcome fluor albus. It was a prospective and experimental study. Respondents with fluor albus received sidr leaves decoction once a day (P1), and twice a day (P2) until they recovered from fluor albus. The data obtained were analysed using the Wilcoxon test with a Confident Interval of 95%. The results showed that sidr leaf decoction could significantly reduce the level of fluor albus in respondents ( $p < 0.05$ ). Frequency of treatment as much as twice a day is more effective than once a day ( $p < 0.05$ ).

**Keywords:** Decoction; Fluor albus; Sidr leaf

### 1 Introduction

Adolescence is marked by puberty. A girl will have menstruation, and boys experience nocturnal emissions. During this period, adolescents experience sexual development such as the maturity of the sexual organs for reproductive purposes. At this time, adolescents will begin to pay attention to personal hygiene, especially their reproductive health. [1] In girls, puberty takes place between the ages of 9-13 years. During this phase, girls experience physical and psychological changes related to the development of their reproductive organs. One of the problems in reproduction health is fluor albus. Fluor albus can cause serious illnesses, such as chlamydia bacterial infection, gonorrhea, trichomoniasis, vulvovaginitis, cervicitis, pelvic inflammatory disease, and cervical cancer. [2]

Anatomically, the vagina is adjacent to the anus so microorganisms from the anus are easy to infect, causing fluor albus. The vagina is equipped with a natural barrier, namely a thick epithelium, glycogen, and the bacteria *Lactobacillus doderlein* which produce lactic acid so that the vagina becomes acidic and has protection. A normal vagina has more than 95% of *Lactobacillus doderlein* bacteria and 5% of other bacteria. [3] Fluor albus is a vaginal condition when mucus or fluid resembling pus has an unpleasant odour and sometimes causes itching. Fluor albus is divided into two types: normal fluor albus and abnormal fluor albus. The main causes of abnormal fluor albus are fungal (*Candida albicans*). Apart from that, fluor albus can



also be caused by a lack of maintaining vaginal hygiene, using excessive rinses, using pants that do not absorb sweat, rarely changing panties, and it could also be due to not changing pads often. [4]

Fluor albus is vaginal discharge with mucus-like pus, greenish colour, bad smell, and itchy. If not handled properly, vaginal discharge can have fatal consequences such as infertility, ectopic pregnancy (pregnancy outside the womb), and uterine cancer. [5] Naturally, normal vaginal discharge occurs before or after menstruation. Vaginal hygiene and psychological factors can trigger this disease. Abnormal vaginal discharge that is untreated will result in an infection of the uterus to the ovaries. Therefore, patients need to examine their reproductive tract so that proper prevention and treatment can be carried out. [6]

Treatment of vaginal discharge is based on clinical symptoms. Chemical treatment often causes resistance, so alternative treatments are needed from natural ingredients which are safer and have minimal side effects. [7] One of the plants that can be used as a fluor albus treatment is the leaves of Sidr (*Ziziphus sphina-christi*). Sidr leaf extract has antimicrobial and antifungal activity against *Escherichia coli*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Aspergillus niger*, and *Candida albicans*. [8] Based on the background above, the research aimed to determine the effect of Sidr leaves decoction as a feminine wash to treat fluor albus.

## 2 Materials and Methods

This study was a prospective and experiments research. Respondents were 30 students of Islamic Boarding School with abnormal fluor albus who took Sidr Leaves decoction as a feminine wash as much as 500 ml in three types of intervention:

P-0 = Negative control (without Sidr Leaves decoction)

P-1 = Sidr Leaves Decoction as a feminine wash once a day

P-2 = Sidr Leaves Decoction as a feminine wash twice a day

The treatment was carried out until fluor albus recovered. Data were obtained every day by observing normal and abnormal flour albus (the smell, color, and texture of fluor albus) experienced by respondents. [9] Analysis data used Wilcoxon non-parametric test with a Confident Interval of 95%.

## 3 Results

**Table 1:** Wilcoxon test results for observing fluor albus before and after treatment and duration of healing of fluor albus after treatment.

Intervention	Treatment	Replication (subject)	Mean Rank	P Value	Duration of healing of fluor albus (day)
P-0	Before	10	0.00	0.005	6.8
	After		5.50		
P-1	Before	10	0.00	0.005	3.6
	After		5.50		
P-2	Before	10	7.00	0.061	3
	After		4.75		

#### 4 Discussion

In this study, sidr leaf decoction was given to respondents to treat fluor albus. The healing process of fluor albus was observed by observing the smell, colour, and texture of vaginal discharge. Data were then analyzed using SPSS (Statistical Product and Service Solution) version 16.0 with a Confident Interval of 95%. The results of the analysis showed that sidr leaf decoction could heal fluor albus in subjects significantly ( $p < 0.05$ ). The length of healing time was also observed in each respondent. Table 1 showed that the treatment of giving sidr leaf decoction twice a day has fewer days to cure compared to another treatment group. The control group showed the longest healing time for fluor albus, about 6 days on average.

Treatment with sidr leaf decoction once a day showed not have a result as good as twice a day groups due to only a few compounds present in sidr leaves, so the antifungal ability against *Candida albicans* is also low, causing fluor albus not to recover immediately. Mardani *et al.* showed that the sidr plant does not have antifungal ability against *Candida albicans* if the concentration given is very low. [10] The ability of the sidr plant as an antifungal *Candida albicans* was reported to be  $>1 \mu\text{g/ml}$  [11].

The results of this study indicate that giving sidr leaf decoction was proven to accelerate the healing process of fluor albus. This is because Sidr leaf decoction has compounds that have antifungal abilities for *Candida albicans*. The results of this study were following the results of in-vitro studies which said that the sidr plant has the ability as an antifungal against *Candida albicans* [12] [13].

This antifungal ability is because sidr leaves contain several compounds, including flavonoids, c-glycosides, 3',5'-di-C- $\beta$ -d-glucosylphloretin, christinin-A, betulinic acids, ceanothic acids, saponins, erols, tannins, triterpenes, glycosides, and polyphenols [15] [16] [17] [18]. Sidr also has essential oils, namely geranyl acetate (14.0%), methyl hexadecanoate (10.0%), methyl octadecanoate (9.9%), farnesyl acetone C (9.9%), hexadecanol (9.7%) and ethyl octadecanoate (8.0%) [19].

Essential oils from plant extracts can act as antifungals by acting on mycelium hyphae. These compounds provoke the release of organelle cells from the cytoplasm, and the loss of rigidity and integrity of the hyphal cell walls, resulting in cell death. Combination of several compounds in a plant extract proved to be better as an antifungal. For example, the combination of quercetin and quercitrin, quercetin and morin, and quercetin and rutin showed higher antifungal activity than flavonoids alone. They added that although quercetin and morin did not show activity of their own, the antimicrobial activities of quercetin and morin were enhanced in the presence of routine [20].

Terpenes modified cell permeability by penetrating between the fatty acyl chains in the cell wall. Furthermore, terpenes inhibit the respiratory chain of fungi, thus suggesting deleterious results on mitochondria [21] [22]. Also, extracts of sidr have already been shown to affect

*Candida albicans* biomass by reducing cell dry weight and increasing glucose levels. This mechanism may be due to cell wall damage and subsequent sterilization of the cell wall [14].

## 5 Conclusions

Sidr leaf decoction could significantly reduce the level of fluor albus in respondents ( $p < 0.05$ ). Frequency of treatment as much as twice a day was more effective than once a day ( $p < 0.05$ ).

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