



Effect of Red Betel Leaf (*Piper crocatum*) on Leucorrhoea

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Abstract

Women have many problems in the area vagina. Most cases that occur are vaginal discharge. Leucorrhoea or in medical language called flour albus is the exit excessive fluid from the vagina. This study to determine the effect of red betel on vaginal discharge. Systematic review using the database: Google Scholar. The search results that meet the criteria are then analyzed for articles. The result shows that water red betel leaf stew can overcome vaginal discharge experienced by women.

Keywords

red betel leaf; vaginal discharge

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Introduction

Women have many problems in the area vagina. Most cases that occur are vaginal discharge. Leucorrhoea or in medical language called flour albus is the exit excessive fluid from the vagina that is not blood menstruation. (Firmanila, Dewi, & Kristiani, 2016). Causes of vaginal discharge according to WHO (2008), based on its prevalence, namely 25% -50%. candidiasis, 20% -40% bacterial vaginosis and 5% -15% trichomoniasis. In Europe only 25% women who experience vaginal discharge caused by weather factors, while women in Indonesia more prone to experience vaginal discharge because it is triggered by humid weather so it is easy to get infected with fungi *Candida albicans*. Apart from fungi, bacteria and parasites, increased vaginal discharge too caused by the behavior of women in guarding genital hygiene (Firmanila et al., 2016).

Moreover, an unhealthy environment also plays a role against one's health, as indicated by water that is dirty with the characteristics of colored, smelly water and taste, when used for necessity everyday can disturb health like diarrhea, vomiting, skin disease and vaginal discharge. The dirty one is suspected to contain mold, bacteria and parasites so that it can trigger vaginal discharge, especially when used for cleaning genitalia. To overcome vaginal discharge can be done with non-pharmacological therapy such as washing the organs intimate with a useful antiseptic liquid clean the intimate organs after urinating large (BAB), urinate (BAK) and after have sex. (Firmanila et al., 2016).

There are many kinds of betel plants (*Piper* sp.), based on the color of the leaves. There are betel plants that are green, red, black, yellow and some are even colored silver (Anggraini & Masfufatun, 2017; Pratiwi & Suswati, 2012; Rahmawati & Kurniawati, 2016). There are five types of betel known in Indonesia, namely Dutch betel (large leaves, dark green taste and strong and spicy smell),

betel cloves (small, yellow leaves, clove-like taste), Javanese betel (softer, less sharp, grass green leaves), yellow betel, black betel and others. However, only 2 types of betel are often found in Indonesia, namely green betel leaf (*Piper betle*, Linn) and red betel (*Piper crocatum*) (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The diversity of betel plants in Indonesia is very diverse. Betel can be distinguished by leaf color into several types, namely red betel wulug and green betel, golden betel, and black betel. Betel wulung is often referred to as sirih ungu because it emits a purple light when illuminated from below at night. This plant is also called sirih keraton because sirih wulung is said to only be found around the Yogyakarta palace area. Green betel is usually used for various traditional activities as well as for medicine. Betel golden or betel jalu which has batik or pale yellow spots, and black betel which is often associated with the mystical world (Rahmawati & Kurniawati, 2016).

Red betel is native to Peru then spread to several regions of the world, including Indonesia. Red betel is found in the island area Sulawesi from 2001 to 2010 reported evidence of red betel collection. Red betel is a shrub with branches and branches, with the distance of the books is between 5-10 cm, and with each book growing will be root. Leaves stemmed, elliptical, acuminatus, sub acutus at basalt with a tapered top, flat edge, glossy or hairless. 9-12 cm long and wide 4-5 cm. Pinnatus leaf veins from the lower half, veins leaves 4-5 x 2, bullulatus-lacunosa. Petiolus, 10 mm long, spike 90-110 mm long, 5 mm thick (Lister, 2016).

The red betel plant has round colored stems purplish green and non-flowering. The leaves are stemmed forming a heart with a tapered top with a flat edge and glossy and lint-free surface. Leaf length can reach 15-20 cm. Green upper leaf color grayish white patterned. The underside of the leaves is a bright red heart. The leaves are slimy, bitter in taste, and has a distinctive aroma of betel. The trunk is grooved and segmented with a

book spacing of 5–10 cm in each root ovary. The surface of the red betel leaf is silvery red and shiny when the light hit (Sudewo, 2005).

Red Betel Leaf (*Piper Crocatum*) is often planted as an ornamental plant, but red betel is also effective for curing various diseases including to cure hemorrhoids, diabetes mellitus, hepatitis, kidney stones, vaginal discharge, shed fart, stop coughing, reduce inflammation, lower cholesterol, prevent stroke, gout, cancer, hypertension, inflammation of the liver, inflammation of the prostate, inflammation of the eyes, vaginal discharge, ulcers, fatigue, joint pain and smoothing the skin, relieving itching and eliminating bad breath (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015; Gunawan, Eriawati, & Zuraidah, 2018; Lister, 2016; Utami, 2017; Wulan, 2019). In general, if we use red betel correctly, according to the rules, it will not cause negative effects to the female reproductive organs (Bambang, 2012; Pratiwi & Suswati, 2012).

The use of 2: 1 betel stew extract can be useful as medicine and is safe for consumption. Betel leaf contains essential oils which contain chemical compounds such as phenols and their derivative compounds, including alliprocatechol, carorene, nicotinic acid, kavikol, kavibetol, eugenol, carvacol, riboflavin, thiamine, vitamin C, sugar, tannins, patin and amino acids (Anggraini & Masfufatun, 2017; Fitria, Shahib, & Sastramihardja, 2020). This plant also has the potential as an antidiabetic, active compounds alkaloids and flavonoids that can reduce blood glucose levels.. (Bambang, 2012; Wulan, 2019).

The essential oil from betel leaf contains flying oil (betlephenol), sesquiterpenes, starch, diatase, sugar and tanning substances and chavicol which have the power to kill germs, anti-oxidation and fungicides, anti-fungal so that empirically reduces secretions in the vaginal canal and acute vaginal discharge. Red betel leaf extract can kill the fungus *Candida albicans* which causes acute vaginal discharge and itching of the genitals. The addition of avocado ethanol extract was able to increase the ability of betel leaf et-

hanol extract to inhibit the growth of *Candida albicans*. The combination of red betel leaf extract and avocado seed extract has an inhibitory power that is more effective in inhibiting the growth of *Candida albicans* than fluconazole. (Anggraini & Masfufatun, 2017; Kurnia, Kedokteran, & Lampung, 2020).

Red betel contains alkaloids which green betel does not have as an antimicrobial and red betel leaf has antiseptic power twice as high as green betel leaf. Not only has antimicrobial properties and the antiseptic power is higher than green betel, water red betel stew also contains carvacrol which is disinfectant and anti-fungal so can be used as an antiseptic for maintain oral health, heal vaginal discharge and bad odor (Firmanila et al., 2016).

This study aims to determine the effect of red betel on vaginal discharge.

Method

Inclusion Criteria and Exclusion Criteria

The article inclusion criteria used: 1) An article that describes the effects of *Piper crocatum* on flour albus. 2) Published articles have complete sections. 3) Published in 2016-2020. The exclusion criteria for articles included: Incomplete article composition.

Search Flow

The search was conducted using the Google Scholar database using the keyword: "sirih merah, keputihan". The articles that appear are then sorted so that no articles with the same title are found. Then the articles were sorted based on the inclusion and exclusion criteria that had been determined. Articles that include abstracts only will be eliminated. So that we get the articles to be analyzed.

Extraction of articles

The articles that have been obtained are then extracted. Extraction of articles is based on the author of the article, the year the article was published, the number of

samples used, the measuring instrument used, the results of the research conducted, and the article database.

Result and Discussion

Search results using the keyword “siri merah, keputihan” used the electronic Google Scholar database. The search results using these three keywords resulted in 421 articles. Then filtering the articles with inclusion and exclusion criteria obtained 38 ar-

ticles. Selection of the next article by eliminating article duplication with the result of 9 articles. Subsequently, article elimination was carried out based on a complete arrangement of 4 article.

The content of red betel Vitamin C

The content of vitamin C in betel drink extracted at a temperature of 70oC (0.08 - 0.11 mg ascorbic acid / ml) is higher than a temperature of 80oC (0.06 - 0.07 mg ascor-

Table 1. Extraction Result

Researcher	Year	Sample	Result
Fera Firmanila, Yulia Irvani Dewi, Dara Kristiani	2016	30	The results showed that red betel leaf boiled water had a deep effect reduce vaginal discharge in women with p value = 0.001 (α 0.05). From the results of this study is expected women who experience vaginal discharge can apply boiled water of red betel leaf as a non-medication pharmacological and make the red betel plant as a family medicinal plant
Sulisti-yowati, Amirul Amalia	2016	30 on the treatment of betel leaves and 28 on the treatment of garlic	The results showed that the betel leaf and garlic are effective in lowering fluoride albus with p value <math><0.05</math>. While the results obtained from the Mann Whitney p value = 0.067 H_0 and H_1 rejected, which means there is no significant difference giving betel leaf and garlic in lowering Fluor Albus. The results of this study are expected to provide a positive contribution to science, especially in obstetrics in terms of reproductive health.
Lia Firtia, M. Nurhalim Shahib, Herri S. Sastrami-hardja	2020	20	The results showed a significant reduction in the number of colonies with p = 0.001 (p <math><0.05</math>). The conclusions of this study do not include differences in the number of Candida albicans colonies between administering boiled manjakani seeds and red betel leaves to women of childbearing age (wus) who succeed in recovering vaginal discharge.
Sri Wulan	2019	46 people in which 23 were in the intervention group and 23 were in the control group.	The increase in the incidence of leucorrhoea from 2 female students who experienced mild vaginal discharge to moderate vaginal discharge in the control group showed that red betel leaf decoction water was able to overcome pathological vaginal discharge compared to normal water. Based on the results of the Wilcoxon test means that there is an effect of giving red betel leaf stew to pathological vaginal discharge in young women in Merbau 1 High School.

bic acid / ml), it means that there were differences for the vitamin C content at different extract temperatures. The content of vitamin C in red betel with the addition of sugar results in a higher content of vitamin C than added sugar. The higher the extraction temperature, the lower the vitamin C content in the betel drink, as well as the increase in sugar concentration. Vitamin C is easily oxidized so that during the process the vitamin C content can decrease. the addition of gelugor acid can increase the content of vitamin C. Processes that involve heating and storage will reduce product quality due to enzymatic reactions and factors such as oxygen, temperature, light and storage containers (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Antioxidants

Antioxidants are substances that can prevent and slow down the oxidation process. Antioxidants are also compounds that can protect cells from the effects of reactive oxygen free radicals that come from the body's metabolism and other external factors. Free radicals are unstable because they have unpaired electrons and look for electron pairs in biological macromolecules. Analysis of the antioxidant content was carried out using the DPPH method which uses ascorbic acid as a standard to calculate its stability based on time and the wavelength used is 515 nm (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The antioxidant content in the betel drink sample ranged from 72.89 to 98.78 ppm vitamin C. The highest antioxidant content was in the MA1 sample (red betel + acid gelugur (1: 1) with antioxidants of 98.78 \pm 0.23 ppm vitamin C followed by samples MA2 (93.57 \pm 0.28 ppm vitamin C) and MA0 (72.89 \pm 0.36 ppm vitamin C). antioxidants in the betel drink sample increased with the addition of gelugor acid. The addition of gelugor acid to red betel drink can increase the antioxidant content of 20.68 - 25.89 ppm. Gelugor acid contains antioxidants and is proven to be effective in losing weight and

contains HCA (hydroxytric acid) which is proven to reduce appetite and can break down fat in the body. In addition, gelugor acid can also have an impact on the growth of *Plasmodium berghei* which causes malaria. So that the addition of gelugor acid in betel drink will add to the phytochemical value in betel drink (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Phenolic

Total phenolics were analyzed using UV-Vis Spectrophotometer. The phenolic content in the red betel sample is 160.56 ppm gallic acid / ml - 244.63 ppm gallic acid / ml. Phenol content in red betel extract (1.66%) is higher than green betel (1.17%). In betel extract contains a lot of antimicrobial and antioxidant compounds so that it has the potential to become a drink containing phytochemicals. Samples with a mixture of green and red betel contain higher phenolics than green betel (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The addition of gelugor acid to the red betel sample, the addition of gelugor acid could increase the phenolic by 84.07 ppm gallic acid / ml. The nutritional content of gelugor acid is proven to increase the phenolic content in the betel drink sample. So, the addition of gelugor acid to this betel drink can create beverage products that are high in phytochemicals (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Flavonoids

Flavonoids are classified as antioxidants that can reduce the risk of various diseases such as heart disease and stroke. Betel leaf contains flavonoids, polyphenolates, tannins and essential oils. Flavonoid analysis was performed using a UV-Vis Spectrophotometer. The flavonoid content in betel drink is 54.71 - 109.58 ppm catechin / ml. the decrease in flavonoid content is influenced by the extraction temperature. Choosing the right extraction temperature can increase the flavonoid content. flavonoids will increase as the extraction temperature increa-

ses between 50 oC - 80 oC. The addition of gelugur acid to betel drink was proven to increase the flavonoid content by 54.87 ppm catechin / ml. Gelugur acid contains flavonoids which can have an effect on bacteria. The addition of gelugur acid can increase the phytochemical content in the betel drink (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Red betel for vaginal discharge

A decrease in the value of vaginal discharge (post-test) in the experimental group due to that water red betel leaf stew can overcome vaginal discharge. This is because red betel contains ingredients alkaloids which green betel lacks as antimicrobial and red betel leaves have antiseptic power twice higher than betel leaf green. All groups experiment which amounted to 15 respondents experienced decreased vaginal discharge (Firmanila et al., 2016).

Statistical results show there is a decrease in the amount of fluid that comes out, fluid color, viscosity, and taste itching and odor caused by $p = 0.001 (< \alpha 0.05)$, it can be concluded that giving boiled water of red betel leaves has a deep effect overcome pathological vaginal discharge. A decrease in symptoms of vaginal discharge has been felt respondents on day 2 of the intervention red betel leaf boiled water. Respondents who experiencing symptoms of itching and a fishy smell say the symptoms have diminished even the fishy smell is gone There was a decrease against the symptoms of pathological vaginal discharge on women, because of the red betel content has been clinically tested to treat vaginal discharge. Ectic is twice as high as betel leaf green. Water red betel stew contains the carvacrol is disinfectant and anti-fungal so it can used as an antiseptic to guard against oral health, cure disease vaginal discharge and bad smell. (Firmanila et al., 2016).

There is a cure on most of the fertile age women (WUS) after being given boiled water of red betel leaf due to the presence of eugenol in the betel leaf red fungus that

can kill fungus *Candida albicans* due to red betel leaves widely used to treat various kinds of diseases, including for lowering vaginal pH and treatments vaginal discharge (Fitria et al., 2020)tanin, saponin, triterpenoid dan kuinon yang diyakini sebagai antibakteri dan antijamur. Penelitian ini merupakan studi Kuasi Eksperimen dengan non equivalent (pretest dan posttest. The leaves contain eugenol which is able to eradicate *Candida* fungi Albikan, and is analgesic (relieves pain). There is also a tannin content in the leaves are useful to reduce secretion fluid in the vagina

Water red betel leaf stew can overcome vaginal discharge experienced by women and very good to look after female organs, this is due to the womb active compounds possessed by red betel leaves such as flavonoids, alkaloids, polyphenolic compounds, tannins, and essential oils that are disinfectants, anti-fungal, anti-inflammatory, anti-bacterial and antiseptic which makes the red betel plant different from green betel (Sulistyowati & Amalia, 2016; Wulan, 2019).

In general, vaginal discharge can caused by several factors, namely, lack of attention to cleanliness female organs, washing organs femininity in the wrong direction, physical activity which is very tiring, not immediately changing sanitary napkins during menstruation, patterns of unhealthy life, mental conditions who is under severe stress, use cleansing soap for clean the female organs excessively, especially weather conditions that humid, often changing partners when having sexual intercourse, hormone imbalance conditions, scratching the female organs often and wearing tight underwear made of synthetic materials (Sulistyowati & Amalia, 2016).

After it was done use of boiled water betel leaf, juvenile bur felt happy because of the Fluor Albus experienced began to decrease Adolescents too said after pouring the boiled water red betel leaf, no longer complaining about the taste itching and discomfort in the area femininity, this is due to the leaves Red betel contains capable eugenol

eradicating the fungus *Candida albicans*, and analgesic relieves pain). There is also the tannin content in the leaves beneficial to reduce secretion (Sulistiyowati & Amalia, 2016).

Conclusion

Water red betel leaf stew can overcome vaginal discharge experienced by women.

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