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QUANTITY OF ANTIOXIDANTS IN TURMERIC AND MUSK LIME PREPARATIONS IN TREATING VANGINAL DISCHARGE

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ABSTRACT (10 PT)
One of the reproductive health problems in women is the occurrence of vaginal discharge which can be experienced by various ages, especially women of childbearing age (WUS). Pathological vaginal discharge is an abnormal vaginal secretion in women. Excessive and abnormal vaginal discharge can be an early symptom of cervical cancer. Abnormal vaginal discharge can be treated with the use of herbs or preparations that function as effective anti-fungi. Turmeric is rich in essential oil content that can reduce vaginal discharge in women because it acts as an anti-bacterial, anti-inflammatory, antioxidant. Vitamin C content in oranges can overcome vaginal discharge. The purpose of the study was to see the characteristics of antioxidants and tannin levels. The research method in this study was an experimental study conducted at the MIPA Laboratory of Pakuan University. The population in this study were turmeric and kasturi orange rhizomes in the plantations of Tanjungpinang City and Bintan Regency. The samples in this study are turmeric and kasturi orange extracts. Turmeric rhizomes will be dried and powdered, while kasturi orange will be filtered to obtain the liquid. These two herbs will be extracted in the laboratory. The results of this study are vitamin C content in fresh oranges of 0.22 mg/100 g with antioxidant activity of 82.93, turmeric powder contains flavonoids with a value of 1116.57 mg/g. Turmeric and orange powder formula (Kujeri) has high antioxidants in the thick extract formula so that it can help kill germs that cause vaginal discharge.

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1. INTRODUCTION

Cervical cancer is a type of malignant tumor that affects the surface layer (epithelium) of the cervix or mouth of the uterus. This cancer occurs because the surface cells multiply and change their properties unlike normal cells. Cervical cancer is one of the most common types of cancer that affects women around the world, including in Indonesia. Based on data from the Global Cancer Observatory released by WHO in 2020, cervical cancer ranks second as the most common type of cancer in Indonesian women, after breast cancer where there are more than 36,000 new cases of cervical cancer in Indonesia, with a death rate of more than 21,000. According to data from the Indonesian Health Profile in 2021, cervical cancer ranked second after breast cancer, with 36,633 cases or 17.2% of all cancers in women. This high number shows that cervical cancer is a very serious public health problem in Indonesia. Cervical cancer occurs due to a viral infection, one of the symptoms of cervical cancer is excessive vaginal discharge. Vaginal discharge is a discharge other than blood from the vaginal opening out of habit, whether smelly or not, and accompanied by local itching. The cause of vaginal discharge can be normal (physiological) which is influenced by certain hormones. The liquid is white, odorless, and if a laboratory examination is carried out, it does not show any

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abnormalities (Winna Kurnia Sari, 2019). Vaginal discharge can occur both normally (physiologically) or abnormal (pathological) Factors that trigger vaginal discharge can be caused by bacteria, viruses, parasitic fungi, or viruses as well as lack of hygiene in the genetalia, especially the vagina.

Turmeric is one type of herbal material that contains active compounds such as curcumin, essential oils, phenols, flavonoids, alkaloids, terpenoids and tannins. The content of these secondary metabolite compounds is thought to be able to inhibit the growth of fungi, especially Candida albicans (Dewayanti, 2022). Turmeric does not cause toxic effects, nor are the side effects of curcumin higher than ibuprofen, but there are still side effects that may occur, including constipation, abdominal pain, diarrhea, allergic reactions, vomiting, and nausea (Wu et al., 2019). Curcumin, dimethoxy curcumin, and bisdementhoxy curcumin belong to the class of phenolic compounds as antifungals that can inhibit the growth of Candida albicans by damaging cell membranes and denaturing proteins. (Mubarak et al., 2019).

Research conducted by Oktaviana et al (2020) on the effect of turmeric decoction extract on the incidence of vaginal discharge said women of childbearing age can be concluded that there is an effect of giving turmeric decoction extract on the incidence of vaginal discharge in women of childbearing age in Karangsari Village Dukuh Trambalan Sulang District Rembang Regency.

Research conducted by Khopipah on efforts to utilize turmeric as a non-pharmacological treatment for vaginal discharge obtained research results with 100 respondents who were divided into two groups, namely 50 respondents in the intervention group (given turmeric acid) and 50 respondents in the control group (not given turmeric acid).

The results of this study indicate that in the intervention group (given turmeric acid) totaling 50 respondents obtained vaginal discharge healing averaging 5.84, standard deviation is 1.149, vaginal discharge healing minimum 5 days and maximum 8 days. Then in the control group (not given turmeric acid) totaling 50 respondents, the average vaginal discharge healing was 7.50, the standard deviation was 0.505, the healing of vaginal discharge was at least 7 days and a maximum of 8 days.

This shows that abnormal vaginal discharge that can cause cervical cancer in women of childbearing age is still increasing in Indonesia. For this reason, it is necessary to explore and conduct research to determine the effectiveness of turmeric and kasturi orange to reduce vaginal discharge in women of childbearing age. The purpose of this study was to determine the effectiveness of kujeri extracts (turmeric and kasturi orange) to reduce vaginal discharge in women of childbearing age and prevent cervical cancer.

2. RESEARCH METHOD

The research method in this study was an experimental study conducted at the MIPA Laboratory of Pakuan University. The population in this study were turmeric and kasturi orange rhizomes in the plantations of Tanjungpinang City and Bintan Regency. The samples in this study were turmeric and kasturi orange extracts. Turmeric rhizomes will be dried and powdered, while kasturi orange will be filtered to obtain the liquid. These two herbs will be extracted in the laboratory. How to treat the ingredients as follows:

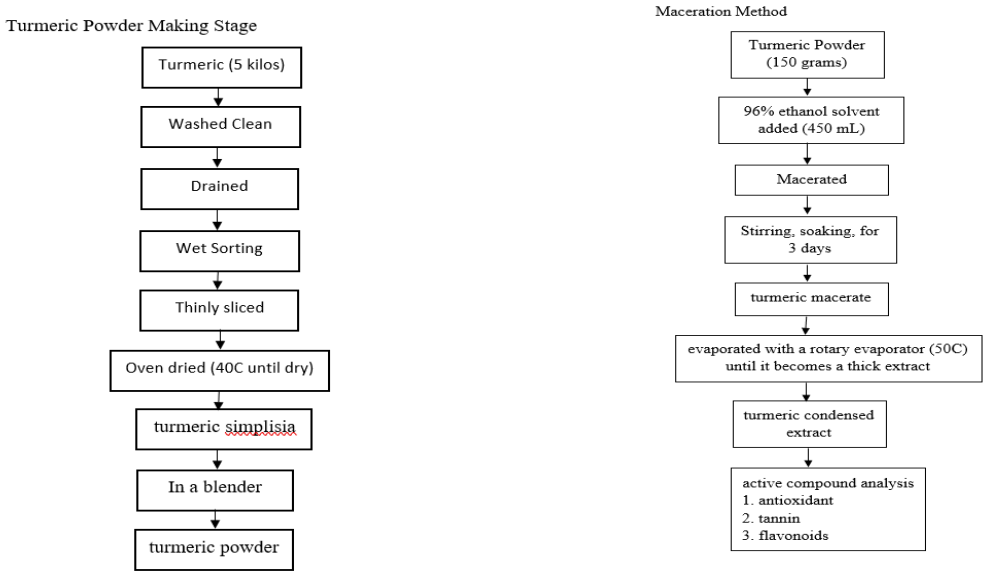

Chart 1. Research procedure

3. RESULTS AND ANALYSIS

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Vitamin C Content and Antioxidant Activity Value of Fresh Citrus Fruit and Citrus Powder and Viscous Citrus Extracts

Oranges are a natural source of vitamin C and antioxidants that have many health benefits. Kasturi oranges used as raw materials were analyzed for vitamin C content and antioxidant activity value, starting from fresh form, then after turning into powder and thick extract. The results of the citrus content analysis are shown in Table 1 below:

Table 1. Vitamin C Content and Antioxidant Activity Values of Fresh Citrus Fruit and Citrus Powder and Condensed Citrus Extracts

Material	Vitamin C content (mg/100g)	Antioxidant Activity Value
Fresh Oranges	0,22	82,93
Orange Powder	0,13	152,03
Thick Orange Extract	0,20	97,01

Based on the data analyzed, the vitamin C content and antioxidant activity value changed significantly after processing. The vitamin C content in fresh oranges is 0.22 mg/100 g, with an antioxidant activity value of 82.93 classified as a strong antioxidant. When fresh oranges were processed into powder using the drying method at 40°C, the vitamin C content decreased to 0.13 mg/100 g, while the antioxidant activity value increased significantly to 152.03 but was classified as a weak antioxidant. The decrease in vitamin C content may be due to the susceptibility of vitamin C to high temperatures during the drying process, as reported by Brown et al. (2020). In contrast, in the form of condensed orange extract, the vitamin C content was slightly higher than that of orange powder, which amounted to 0.20 mg/100g. The extraction method used tends to retain vitamin C content better than drying. The antioxidant activity value of the thickened orange extract, 97.01, was classified as a strong antioxidant. These results indicate that the processing process has a significant impact on the nutritional content and biological activity of oranges. The drying method can reduce the vitamin C content and antioxidant activity. In contrast, the extraction method is able to maintain better vitamin C content and antioxidant activity. Therefore, to produce citrus products that are rich in vitamin C while having high antioxidant activity, the extraction method can be used.

Results of Qualitative Analysis of Flavonoids and Tannins in Turmeric

Turmeric (Curcuma longa) is a spice plant widely recognized for its pharmacological properties, especially as an antioxidant, anti-inflammatory, and antimicrobial. The major bioactive components in turmeric include curcuminoids, flavonoids, and tannins, which contribute significantly to its health benefits. Qualitatively, the presence of flavonoids in turmeric can be detected using specific staining assays such as the Wilstätter method or Shinoda reaction. Flavonoids show positive results in the form of certain color changes, such as red or yellow color when reacting with FeCl3_33 or Mg/HCl reagents. Tannins, on the other hand, are detected through reaction with ferric chloride which produces a blue-black color for hydrolyzed tannins and a green color for condensed tannins.

Table 2. Results of Qualitative Analysis of Flavonoids and Tannins in Turmeric

Content	Positive/Negative	Picture
Flavonoids	Positive is indicated by color changes in the form of red, orange, yellow, brown	
Tannins	Positive is indicated by a color change in the form of blackish green or dark blue	

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Flavonoids in turmeric have a major role as antioxidants with the ability to ward off free radicals, while tannins are known to have astringent activity that is beneficial for wound healing and inhibition of microorganism growth. Studies show that the flavonoids and tannins in turmeric provide synergy in enhancing the biological activity of turmeric as an antimicrobial and cellular protective agent (Kumar & Gupta, 2020).

4. CONCLUSION

The content of vitamin C in oranges can overcome vaginal discharge. The formula is made based on the consideration that the higher antioxidant content of the formula is orange powder, while the positive turmeric contains tannins and phlofanoids which are very effective in killing the fungus that causes leucorrhea in women of childbearing age. It is hoped that after this research it can be seen how this turmeric and kasturi orange extract can kill the germs that cause leucorrhea in women of childbearing age.

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