

TURMERIC DRINK REDUCES BODY ODOR DURING MENSTRUATION

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ABSTRACT

Aim of study. Body odor has a very negative effect on socializing. Body odor can make self-conscious and low self-esteem. Body odor is often a disturbance in activities at work, socializing, and meeting. The purpose of this study was to determine the effect of turmeric drink on body odor.

Method. This research was conducted at State Middle School 5 Palangka Raya. The research design used was a quasi-experimental pretest-posttest with control design. Samples were 25 for the intervention group and 25 for the control group. The treatment consisted of consuming tamarind turmeric drinks in the intervention group and consuming tamarind drinks for the control group. Treatment for 3 days, with a frequency of 2 times per day. Data analysis using Mann Whitney test.

Result. There was a significant difference in the value of body odor between the groups that consumed turmeric drink and those who did not consume turmeric drink ($p = 0.000$). Based on subjective data, it was found that body odor decreased by 63% in the group consuming turmeric drink and in the control group there was no decrease in body odor.

Conclusion. Turmeric drinks can reduce/eliminate body odor

Keywords: Body odor, turmeric.

1. Introduction

Body odor has a very negative effect on socializing. Body odor is often an indication that a person cannot keep his body clean. Body odor can make self-conscious and low self-esteem. Body odor is often a disturbance in activities both at work, socializing, and meeting. Body odor is closely related to the sweat released by the body. Some women complain that their body odor increases during menstruation (Fielding, 2011).

Several attempts have been made to reduce the activity of bacteria in decomposing body sweat. The efforts that have been made are with topical deodorants which are sold in the market under various names. Topical efforts are of course limited to certain areas such as the armpits, whereas for other apocrine gland areas such as the pubic area and head hair nothing has been done. Efforts to

reduce body odor systemically are certainly very effective in overcoming the problem of body odor as a whole. One systemic effort that is believed to reduce body odor is to consume turmeric.

2. Literature review and hypotheses development

The body has two types of sweat glands, namely eccrine and apocrine glands. Eccrine glands open onto the surface of the skin, while apocrine glands are found in areas where hair grows, such as the scalp, armpits and pubis. These two glands secrete different types of sweat. The sweat from the eccrine glands is mostly water and salt, but the apocrine glands secrete sweat which contains fats, proteins and carbohydrates ([yemale, 2013](#)). The sweat secreted from the apocrine glands plays a major role in the process of body odor. Sweat which contains fat, protein and carbohydrates is highly favored by bacteria.

Basically sweat does not smell. Body odor occurs when bacteria on the surface of the skin break down sweat from the apocrine glands into volatile acids and release an unpleasant odor. There are two types of acids that cause body odor to be unpleasant, namely: propionic acid or propanoic acid which smells like vinegar and is the result of the breakdown of sweat by propionibacteria, bacteria that live in the ducts of the sebaceous glands of adults and adolescents; The second type of acid is isovaleric acid produced by the bacterium staphylococcus epidermis (Maria, 2013). During menstruation, body odor is more pungent, not because of menstrual blood, but during menstruation, the metabolism increases so that it produces more sweat. At the time of menstruation approaching the work of the apocrine glands increases, so that a lot of apocrine gland sweat is produced and there is also a lot of material that can be broken down by propionibacteria and epidermal staphylococcus bacteria. This process causes an increase in body odor during menstruation. (Kuukasjarvi S, ed al, 2004).

Turmeric is a plant that functions as an antimicrobial, antibacterial, reduces blood fat and cholesterol levels, and is able to cleanse the blood (Olivia, et al, 2009). Turmeric can eliminate intestinal inflammation (Ukil, et al, 2003). Turmeric is efficacious in inhibiting the process of microvascular inflammation (Lukita-Atmadja, et al, 2002). Turmeric also based on phytochemical analysis contains analgesics (Navarro, et al, 2002). Tamarind turmeric is categorized as an herbal drink that can function as a medicine (Dinda, E., 2007). Turmeric is believed to be able to reduce body odor, even body odor during menstruation can be reduced by consuming turmeric drinks. The

role of turmeric in being able to reduce body fat levels and its ability to prevent the activity of bacteria that cause body odor encourages researchers to prove evidence based on this matter through research. The hypothesis of this study is that drinking turmeric can reduce body weight during menstruation.

3. Research methodology

This research was conducted at State Middle School 5 Palangka Raya. The research design used was a quasi-experimental pretest-posttest with control design. This study used the treatment of consuming turmeric plus tamarind and sugar in the intervention group, while the control group only consumed tamarind and sugar. Drinks are given 2 times a day in the morning and evening for 3 days. Measurement of body odor twice, namely before treatment and after treatment. Measurement of body odor using a scale of body odor degrees 1-10 (Havlicek J, *ed al.* 2006) and laboratory examination by measuring the acidity level of the armpit swab using a pH meter Dr.Meter pH – 100 High accuracy. The sampling method in this study was random sampling and according to the inclusion and exclusion criteria. Based on previous research Anintida, A.Y (2010) who conducted research using the intervention of tamarind turmeric drink and changes in menstrual pain assessed at a significance level (α)= 0,05, $s = 0,53$, mean difference = 0,43. Calculation of sample size using the mean difference formula. The calculation results obtained sample for each group is 25 people \. The inclusion criteria in this study were adolescents who experienced menstruation every month, did not consume herbs or drugs during or before menstruation. Exclusion criteria, namely sick adolescents who needed treatment or rest and were outside the location when the study was taking place. The criteria for dropping out are if you do not carry out the intervention by consuming $\geq 25\%$ of turmeric drinks or 1 time. The statistical test used to see the relationship between the independent variable and the dependent variable is the Mann Whitney test. The multivariable analysis used is linear regression.

4. Results and discussions

An overview of the characteristics of the research subjects in both the intervention group and the control group can be seen in the following table.

Table 1. Distribution of Research Subjects

Characteristics	Group						<i>p</i>
	Intervention			Control			
	n = 25			n = 25			
	n	%	mean	n	%	mean	
Age	16 years	6	24		16	32	0.497
	17 years	12	48	16,96	10	40	
	18 years	7	28		7	28	

Note: n = number of samples, *p* = *p* value

It is known that the value of $p > 0.05$. This value means that the control group and the intervention group have the same or homogeneous characteristics. The results of bivariate analysis of body odor values before treatment and after treatment in both the intervention group and the control group can be seen in Table 2.

Table 2. Value of Body Odor Before and After Treatment of Each Group

Group	Measurement		<i>P</i>
	Mean Rank		
Intervention	0,00	13,00	0,000*
Control	8,25	10,50	0,338*

*Wilcoxon test

The results of the analysis in the intervention group showed a *p* value < 0.05 (0.000), which meant that there was a significant difference in the value of body odor before treatment and after receiving treatment, with a difference of 13. The results of the analysis in the control group showed a *p* value > 0.05 (0.338) which means there is no significant difference in the value of body odor before and after treatment. Analysis of data on changes in the value of body odor components in two different groups, namely the control group and the intervention group, can be seen in table 3

Table 3. Differences in changes in body odor values

Group	Measurement		<i>P</i>
	Mean Rank		
Control - Intervention	13,00	38,00	0,000*

* Mann Whitney

The test results showed a *p* value < 0.05 (0.000), this means that there is a significant difference in the average value of body odor between the control group and the intervention group. The results of this study are reinforced by subjective data collected using a questionnaire as shown in Table 4 and Table 5.

Table 4. Assessment of changes in body odor before and after treatment using a questionnaire in the control group

No	Body Odor Changes Before And After Treatment	percentage
1	Body odor increases	50 %
2	Permanent body odor	50 %
3	Reduced body odor	0 %
		100 %

Tabel 5. Penilaian Perubahan Bau Badan Sebelum dan Sesudah Perlakuan Menggunakan Kuesioner Pada Kelompok Intervensi

No	Body Odor Changes Before And After Treatment	percentage
1	Body odor increases	0 %
2	Permanent body odor	37,5 %
3	Reduced body odor	62,5 %
		100 %

Tables 4 and 5 show changes in body odor before and after treatment in both the control and intervention groups. There was a difference in the results between the two groups based on the subjective data of the study participants. In the control group stated that the treatment material did not result in a reduction in body odor and even 50% thought body odor increased during menstruation. In contrast to the intervention group that consumed turmeric. Based on subjective data, it is known that most of them, namely 62.5%, felt their body odor reduced after consuming turmeric drinks and none of them felt their body odor had increased.

All research subjects consumed the same food provided by the hostel, only drinks and snacks that they bought outside and did not include food criteria that cause body odor. The external variable that was tested for analysis was the physical activity variable. The physical activity variable based on the results of the questionnaire obtained 2 categories, namely light physical activity and moderate physical activity, no heavy physical activity. The results of the external variable bivariate analysis on body odor values can be seen in table 6.

Table 6. Effect of External Variables on Body Odor

Physical Activity Variables	Body Odor Value Mean Rank	<i>P</i>
Control Group:		0,906

Light Activity	13,50	
Moderate Activity	12,93	
Intervention Group:		
Light Activity	18,50	0,177
Moderate Activity	12,25	

Table 6 shows the results of bivariate analysis of physical activity and body odor values. The results of the analysis showed that the p-value in both the control and intervention groups was > 0.05 . P value = 0.906 and 0.177 showed that there was no significant difference in the value of body odor in mild and moderate physical activity in each group. The results of the bivariate analysis on the external variables which show no significant difference in value, means that the multivariate test does not need to be continued.

Turmeric, which has antimicrobial, antibacterial and antifungal properties, is very useful in reducing body odor. The process of forming body odor is closely related to the sweat produced by humans. The sweat produced by the apocrine glands contains fats, proteins and carbohydrates. This sweat is produced by apocrine glands which are found on hairy skin surfaces such as the head, armpits and pubis. Sweat like this is favored by bacteria and microbes. Bacteria such as propionicteria indeed live in the sebaceous glands or sweat glands and epidermal staphylococcus which live under the skin. Body odor occurs when bacteria break down sweat from the apocrine glands into volatile acids which release an unpleasant odor. There are two types of acids that cause body odor to be unpleasant, namely: propionic acid or propanoic acid which smells like vinegar and is the result of the breakdown of sweat by propionibacteria, a type of bacteria that lives in the ducts of the sebaceous glands of adults and adolescents; isovaleric acid produced by the epidermal staphylococcus bacteria, which causes a cheese-like odor (Maria, 2013). Administering drugs or topical deodorants can indeed reduce body odor because it reduces the number of bacteria on the surface, it's just that propionibacteria live in the sebaceous glands and staphylococcus under the skin so they can't eliminate most of the sweat-decomposing microbes that cause body odor.

This study used research subjects during menstruation because during menstruation there is an increase in the work of the apocrine glands and body odor. This process causes an increase in body odor during menstruation. The use of a systemic tamarind drink is certainly very effective in reducing body odor. Turmeric is a plant that functions as an antimicrobial, antibacterial, antifungal

(Olivia, et al, 2006). Tamarind turmeric drink can stop the activity of propionic bacteria and staphylococcus in the sebaceous glands and epidermis. Based on the results of this study, the final evidence was that the acidity level of the armpits was significantly different between the groups that consumed turmeric drink and those who did not consume turmeric drink.

Turmeric besides functioning as an antimicrobial, anti-inflammatory, antibacterial, antifungal, analgesic, anti-tumor, cancer prevention, it also functions to reduce blood fat and cholesterol levels, and is able to cleanse the blood. (Olivia, et al, 2006). Fat and cholesterol as one of the materials secreted through the apocrine sweat glands are highly favored by bacteria. The more material that is released, the more bacteria prefer to decompose it so that more decomposition end products result which cause body odor. Because turmeric drinks are theoretically able to reduce fat and cholesterol levels, thereby helping to reduce body odor. Subjective assessment using a body odor questionnaire supports the results carried out objectively from the calculation of the pH of the body odor-producing substance.

5. Conclusion

Turmeric drinks can reduce and even eliminate body odor during menstruation. Tamarind turmeric drink can reduce the activity of propionic bacteria and staphylococcus found in the sebaceous glands and epidermis as a cause of body odor.

Limitation and study forward

The sample of this study was limited to adolescents and did not represent all ages of women who were still menstruating. Further research can be carried out by comparison with the age levels of women starting from adolescence, early adulthood, and late adulthood.

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