

The Effectiveness of Temulawak (Curcuma Xanthorriza) Plus Honey in Increasing Children Under Five Years' Body Weight

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KEYWORDS

curcuma, honey, quasi-experimental, children < 5 years, Blora.

ABSTRACT

Background: Malnutrition is still nutrition problem in Indonesia. One of the factors is the loss of appetite of children. In empirical side, Temulawak (Curcuma xanthorriza) is known having effect of increasing appetite. Honey is a natural ingredient that has been used for its energy and can stimulate appetite. This study aimed to determine the effectiveness of Temulawak plus honey on toddlers' body weight gain in Blora District, Central Java, Indonesia.

Materials and methods: This was a quasi-experimental study design. The subjects were children aged 1-5 years old. Treatment group received 250 gr powdered Temulawak and 1 tablespoon of honey and mixed with 125 cc mineral water. While the control group just received 250 gr powdered Temulawak mixed with 125 cc mineral water. All the subjects drank two times in every day (morning and evening before eating) lasts for 30 days. Body weight was measured before and after the treatment. Independent t-test was employed to test the difference mean of body weight in treatment and control group.

Results: The study resulted that the average mean in the treatment group was 1.247 kg while in the control group was 0.393 kg. There was difference mean of body weight gain between treatment and control groups. The treatment group resulted the body weight gain statistically significant ($p < 0.001$).

Conclusions: This study approved that Temulawak (Curcuma xanthorriza) plus honey effective in increasing children under five years old body weight. It is strongly recommended to give Temulawak plus honey for children who have loss of appetite to prevent them from malnourished status.

1. Introduction

Indonesia as a developing country has many intricate issues, particularly with nutrition. The triple burden of malnutrition—overweight, stunting and wasting—is the trend of nutritional issues in this country.^{1,2} Children with poor nutritional status may experience delays in growth, development, and IQ, as well as an increased risk of several illnesses. Long-term feeding difficulties can stunt a child's growth and development, which can lead to malnutrition.³⁻⁵

Children under 5 years are often experienced loss of appetite, which will reduce the nutritional intake. The loss of appetite is often associated with internal factors such as intestinal worm infection. While the external factors such as unattractive shape of foods, low food variety, or physically active play.⁶ The loss of appetite in children can be treated with herbal formula which generally increase the metabolism of the children.⁷⁻⁹ The formula also useful not only for suppressing and inhibiting stomach acid, but also in stimulating food secretion, stimulating enzymatic activity so that the stomach feels empty and will send signals to the brain which will cause hunger that will appear the desire to eat. In the effort to deal with children who have this problem, parents usually try any various ways to get their children to eat the food that served. In general, action taken by parents by giving vitamins to increase appetite or consulting with health workers.¹⁰

In addition, this condition, for a long time, will decrease their body weight or lower than their age (under-nutrition condition). In the society, it is common knowledge that traditional herbal such as Javanese Turmeric (Curcuma xanthorriza) locally famed as Temulawak has been extensively used to overcome loss of appetite in children. It can increase appetite of primary anorexia patients because of contains curcumin which can repair abnormalities in the bile, so that the process of absorbing food in the intestine is better.¹¹ Honey is a natural sweet substance produced by honeybee from flower nectar. It is as a source of energy and materials that are converted into fat and glycogen. Honey can increase children under five years old appetite who have a lack of

protein energy.^{12,13} Increased of appetite is characterized by an increase of children weight according to their age and height. Therefore, this study aimed to determine the effectiveness of Temulawak (*Curcuma xanthorriza*) plus honey on children' body weight gain.

2. Materials and methods

Study site and setting

The study was conducted in Blora District, Central Java, Indonesia. This was a quasi-experimental study with pre-test and post-test design. The subject of this study were children under five years old. The sampling technique was purposive sampling with inclusion criteria: children aged 1-5 years old residing in Kedungjenar Village, Blora; children should in health condition; not stunted. All subjects must clearly express their willingness to participate in the study by signing inform consent. The total number of subjects were 30 children under five years old.

Data collection

The subject of the study divided into two groups: treatment and control group (1:1). Every subject in the treatment group received 250 gr powdered Temulawak (*Curcuma xanthorriza*) and 1 tablespoon of honey and mixed with 125 cc mineral water. While every subject in the control group just received 250 gr powdered Temulawak (*Curcuma xanthorriza*) mixed with 125 cc mineral water. The subject in the treatment and control group received the drink two times in every day (morning and evening before eating) lasts for 30 days. Every subject was measured for body weight before and after the treatment. Measuring body weight by using a digital weight scale step.

Statistical analysis

The normality of the data was examined using the Kolmogorov-Smirnov test, and when necessary, within-group changes were assessed using paired t-tests. For non-normally distributed data, the Wilcoxon signed-rank test was utilized. To compare the mean difference between treatment and control group, we employed independent t-test. A 95% confidence interval (CI) was employed in the study, and alpha 0.05 was used to determine significance.

Ethical consideration

The study was approved by the Health Research Ethics Committee Poltekkes Kemenkes Semarang (No: 0755/EA/KEPK/2023). We carried out the research with the participants' consent. Before being enrolled in the study, all participants were informed of its goals, risks, and benefits and were required to sign a consent form. Every piece of personal data belonging to the study participants has been kept private and secure.

3. Results

A total 30 children (15 treatments group and 15 control group) were enrolled in this study completed the 30 days follow-up. The highest variable of characteristic by age both treatment and control group were 4 year (40%), by gender was female both treatment and control group (60% and 67%, respectively), by parental education level was high school (93% and 87%, respectively), and by parental occupational was private sector (67% and 74%, respectively). The study resulted that 93% subjects in the treatment group increase body weight after intervention compare with the control group (80%). The results can be seen in Table 1.

Table 1. Participants' characteristics (n= 30)

Characteristics	Treatment group (n/%)	Control group (n/%)
Age (year)		
1	3/20	5/33
2	4/26	1/7
3	1/7	2/13
4	6/40	6/40
5	1/7	1/7
Gender		
Male	6/40	5/33
Female	9/60	10/67
Parent's education level		
High school	14/93	13/87

Graduate	1/7	2/13
Parental occupational		
Civil servant	2/13	2/13
Tradesmen	3/20	2/13
Private sector	10/67	11/74
Body weight gain after intervention		
Increase	14/93	12/80
Constant	1/7	3/20

Bivariate analysis

Before conducting the bivariate analysis, we employed normality data test by using Shapiro-Wilk test. The test resulted that the data normally distributed between the groups, then we employed the independent t-test. The results of the test showed in Table 2.

Table 2. Independent t-test results

Groups	n	Mean	Standard Deviation	p
Control	15	0.393	0.2251	<0.001
Treatment	15	1.247	0.5502	

The study resulted that there was difference mean of body weight gain between treatment and control groups. The treatment group resulted the body weight gain statistically significant ($p < 0.001$).

4. Discussions

The subjects in the treatment group that received Temulawak (*Curcuma xanthorriza*) plus honey showed increase of body weight gain. Temulawak is originated from and mainly cultivated in Indonesia and other Southeast Asian countries.^{14,15} Indonesian people usually use it as one of spices and also traditional herbal drink called Jamu.¹⁶ In empirical side, Temulawak is known having effect of increasing appetite especially children under five years. In addition, Temulawak contain essential oils and curcumin. The essential oils and curcumin help the digestive system function better by secreting bile, stimulating the bile wall, and encouraging the release of pancreatic juice, which contains the enzymes lipase, protease, and amylase, which aid in the better digestion of proteins, carbohydrates, and fats.^{14,17,18}

Honey is a natural ingredient that has been used for its energy, sweetness, and possible health advantages. It may help the body to maintain health, increase immune system, and can stimulate appetite.^{12,19} Honey contains high in sugar, vitamins and minerals and may contribute to weight gain. According to the US Department of Agriculture (USDA) National Nutrient Database, one tablespoon of honey (approximately 21 grams) contains 64 calories, 17.3 grams of carbohydrate (17.3 grams of sugar no fiber), 0 grams of fat, 0.1 grams of protein, 1.3 mg of calcium.^{12,19} Sugar, a type of carbohydrate, provides the calories in honey. The sugar in honey is about 50% glucose and 50% fructose. These form of sugars are simpler to digest because our bodies absorb them directly.²⁰

In addition, the high prevalence of stunting, wasting (malnutrition), obesity, and micronutrient deficiencies remain major nutritional issues in Indonesia.³ According to the Ministry of Health's Indonesian Nutrition Status Survey (SSGI) in 2022, there were 7.7% of wasting and 21.6% of stunting children.²¹ These nutritional problems are caused by many factors, one of them is eating patterns with unbalanced nutrition. The unbalanced nutrition may cause by the loss of appetite.^{3,21} By giving the combination of Temulawak plus honey regularly can increase their appetite that will impact to the body weight gain. It is crucial that children consume the appropriate amounts of calories, nutrients, and minerals. Our results inline with previous study that resulted the effectiveness of Temulawak plus honey in increasing children body weight.^{8,17,18}

5. Conclusions

This study approved that Temulawak (*Curcuma xanthorriza*) plus honey effective in increasing children under five years old body weight. It is strongly recommended to give Temulawak plus honey for children who have loss of appetite to prevent them from malnourished status.

Funding

None

Conflict of interest

None

Reference

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