Therapy of Cinnamon Decoction using Honey in Reducing Gout

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ABSTRACT

Background: Gout is an antioxidant, the final product that is produced from the metabolism/ breakdown of purines, but if in excessive amounts in the blood, it will experience crystallization and can cause gout. Giving cinnamon extract to male white rats with hyperuricemia has the effect of reducing uric acid levels, because the extract of cinnamon contains Polyphenols namely Sinamldehid which is high enough (68.65%) to be a source of antioxidant compounds which can inhibit Xanthine Oxidase Enzine. This study aimed to analyze the therapy of dekokta cinnamon with honey to reduce uric acid for people with gout.
Subjects and Method: This was a quasi experiment with pre and post-test design. The study was conducted in Gambirsari Community Health Center, Kadipiro Subdistrict, Mojosongo, Surakarta, Central Java, in May 2018. A sample of of 50 people with gout sufferers were selected by quota sampling and divided into 2 groups. The treatment group of 25 people received cinnamon decoction with honey with a concentration of 15%. The therapy was carried out for 1 week with a dose of once a day. In the control group, Allopurinol 100 mg was given for 1 week, with a dose of once a day. The data were analyzed by Wilcoxon and Mann-Whitney est.
Results: Uric acid in decoction cinnamon with honey group was lower than in control group and it was statistically significant (p= 0.023).
Conclusion: Decoction cinnamon with honey can reduce uric acid level among gout patients.

Keywords: cinnamon, decoction, honey, gout

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BACKGROUND

Uric Acid is the final product or waste product produced from the metabolism/ breakdown of purines. Gout is also an antioxidant from humans and animals, but if in excessive amounts in the blood, it will experience crystallization and can cause gout. Gout has a role as an antioxidant if the levels are not excessive in the blood, but if the levels are excessive, uric acid will act as a pro-oxidant (McCrudden, 2000).

The previous study was conducted by Tukiyo et al. (2014) on the test of the effect of cinnamon ethanol extract (Cinnamomum Burmanii) on male white rats (Rattus Novergicus), the results showed that uric acid levels in the blood of male white rats decreased by 64.33% with cinnamon extract at a concentration of 15%. According to Winda (2014) showed that the administration of cinnamon extract has the effect of reducing uric acid levels in blood in hyperuricemic rats, because the cinnamon extract contains high Polyphenols namely Sinamldehid (68.65%) become a source of antioxidant compounds so that it can inhibit Xanthine Oxidase Enzine.

Cinnamomi Burmannii Cortex is a stem bark of Cinnamomun Burmannii Nees ex Bl., Member of the tribe of Lauraceae

(BPOM RI, 2010). According to Shekar et al, in cinnamon (Cinnamomum burmanni-Nees ex Bl.), there are chemical compounds in the form of phenols, terpenoids and saponins which are sources of antioxidants. Besides that, cinnamon is also known as one of the plants that contain synamaldehyde compounds. Sinamaldehyde is an aldehyde derivative compound which is also included in the class of polyphenolate compounds that have antioxidant properties and sunscreens that are responsible for inhibiting free radical activity (Shekar et al., 2012).

The human body provides 85 percent of purine compounds for daily needs, this means that the need for purines from food is only around 15 percent. Foods that contain high purine substances will be converted to gout. Hyperuricemia can form uric acid crystals/kidney stones which will form a blockage in the ureter. Some causes of increased uric acid were because of several things, including certain diseases such as goud, Leschnyhan syndrome, endogenous nucleic acid metabolism, cancer, abnormal levels of erythrocytes in the blood due to destruction of red blood cells, polycythemia, pernicious anemia, leukemia, genetic disorders purine metabolism, metabolic disorders congenital gout (increased endogenous uric acid synthesis), alcoholism that increases lacticidemia, hypertriglyceridemia, impaired renal function and obesity, ketotic acidosis, acidosislactate, ketoacidosis, lacticidosis, and psoriasis. Normal uric acid levels in the blood are for women 2.0 - 6 mg/dl and for men 2.1 - 7 mg/dl. A high purine diet is thought to be the cause of an increase in uric acid levels which is at risk for hyperuresemia (Lina and Setiyono, 2014).

SUBJECT AND METHOD

1. Study Design

The study was carried out by quasi experiment with pre and posttest design. A sample of 50 gout patients was selected for this study by quota sampling and divided into 2 groups. Each group consisted of 25 patients.

2. Population and samples

The study was conducted in the working area of the Gambirsari Health Center, Kadipiro Village, Mojosongo Surakarta. The data collection was carried out in May 2018. The treatment group of 25 people received cinnamon dekokta with honey with a concentration of 15%, the therapy was carried out for 1 week with a dose of once a day. In the control group, Allopurinol 100 mg was given for 1 week, with a dose of once a day.

3. Study Instrument

Decocta making was done by heating 15 grams of cinnamon simplicia with water as much as 100 cc in a pan with a temperature of 90^{o}C for 30 minutes. Strain with a flannel cloth and let stand until warm, then mixed with 1 tablespoon of honey and then it is ready to consume. Therapy is carried out for 1 week at a dose of once a day. In the control group, Allopurinol 100 mg was given for 1 week, with a dose of 1 time a day. The data were analyzed by Wilcoxon and Mann Whitney test.

RESULTS

1. Descriptive Analysis

Respondents in this study were 50 people, where the average age in the treatment group was 57 years and in the control group is 51.16 years. Minimum age in the treatment group was 41 years and a maximum of 72 years, while in the control group a minimum age of 35 years and a maximum of 85 years (Table 1).

Table 1. Age of study subjects

Characteristics	N	Mean	Median	SD	Min.	Max.
Treatment group	25	57.00	57.00	7.59	41	72
Control group	25	51.16	47.00	13.83	35	85

2. Frequency distribution

From Table 2, it can be concluded that the majority of respondents from both groups were women with a percentage of 76%. While for the type of work in the treatment group the majority of housewives were 64%, and in the control group of housewives were comparable with entrepreneurs, which were 40% for each.

Table 2. Frequency distribution

Characteristics	Treatment		Control	
	n	%	n	%
Gender				
Male	6	6	24	24
Female	19	19	76	76
Employment				
Housewives	16	64	10	40
Entrepreneur	5	20	10	40
Private employees	3	12	5	20
Retired	1	4		

3. Bivariate Analysis

In the treatment group where the treatment group received cinnamon decoction therapy with honey. The results showed that in the pre-intervention mean value of uric acid was 8.6, min 6.2 and max. 19.8. While in post intervention the mean were 6.0, min 2.0 and max 11.5. with p= 0.001.

Then in the control group, where the respondents received Allopurinol 100 mg for 1 week, with a dose of 1 time a day, the results of the pre intervention showed that mean 8.0, min 6.2 and max. 11.6. While at post intervention, the mean value was 6.5, min 4.2 and max. 8.4. (Table 3).

The Result of Mann Whitney Test

This study was conducted to analyze the effect of decocta cinnamon therapy with honey on reducing uric acid. Table 4 showed the results of the Mann-Whitney test. Table 4 showed that uric acid level in post treatment (mean= 6.31) was lowered than pre treatment (mean= 8.35).

Table 3.Wilcoxon statistical test results

Uric acid	Group			
	Treatment		Control	
	Pre	Post	Pre	Post
n	25	25	25	25
Mean	8.69	6.04	8.02	6.59
Median	7.90	5.80	7.70	6.80
SD	2.82	1.75	1.19	0.96
Minimum	6.2	2.0	6.2	4.2
Maximum	19.8	11.5	11.6	8.4
p	0.001		<0.001	

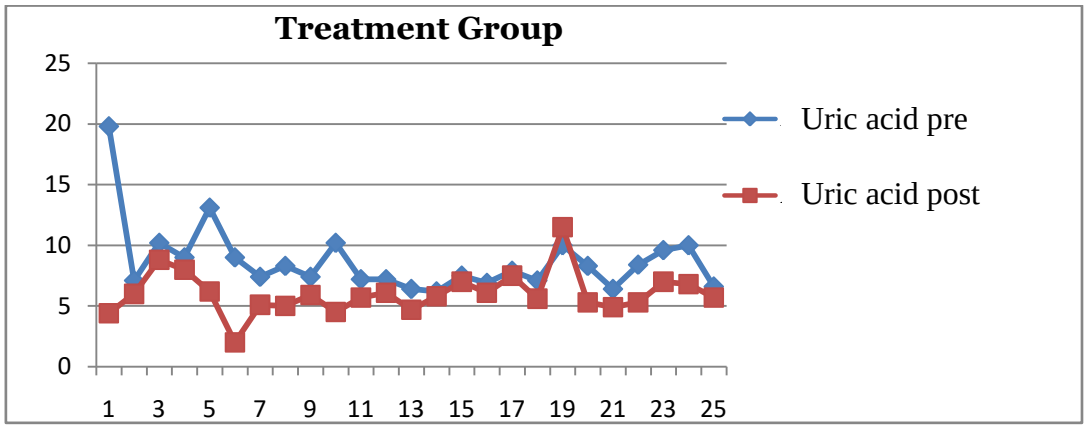

Figure 1. Diagram of Treatment Group

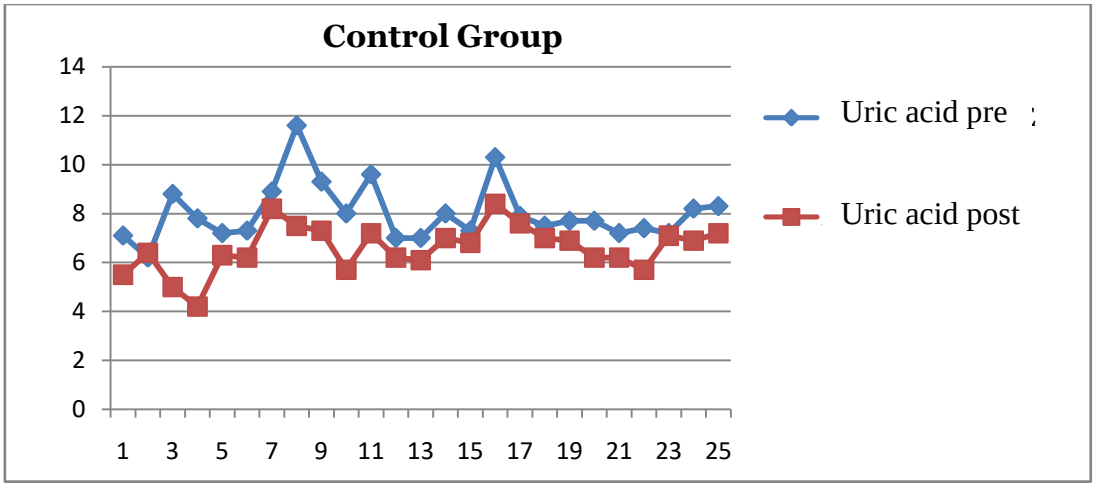

Figure 2. Diagram of Control Group

Table 4. Mann Whitney statistical test results

Uric acid in both groups	N	Mean	SD	Min.	Max.	p
Pre	50	8.35	2.17	6.2	19.8	0.749
Post	50	6.31	1.43	2.0	11.5	0.023

DISCUSSION

The basis of this study was a previous study conducted by Tukiyo (2014) which conducted a study on the effects of antiuricemia of ethanol extract of cinnamon (*Cinnamomum burmanii*) on male white rats (*Rattus novergicus*) previously induced by potassium bromate. In his study using maceration extraction method, 96% ethanol solvent, soaking the sample for 3 days to get cinnamon extract. The test animals used were healthy male white rats with a body weight of 100-200 grams, 15 rats and divided into 5 treatment groups, each group consisted of 3 rats. Tukiyo uses different concentrations of cinnamon extract, namely 5%, 10%, and 15%. Of the three differences in concentration, the most effective way to reduce uric acid was 15% (Tukiyo, 2014).

This study did not involve BMI in respondents, so the concentration used 15% given to respondents was not classified based on BMI. In addition to the effects of dekokta cinnamon, Honey was a material that contained high anti-oxidants. According to Ensminer et al. in Chayati and Mila-

diyah (2014), it was stated that the antioxidant properties in honey originated from the components of flavonoids, phenolics, vitamin C, amino acids, enzymes, catalase and others (Chayati and Miladiyah, 2014).

Respondents in this study were not in the condition of a doctor's supervision or in a condition that had a complex disease. Khanna et al. (2012) stated that the initial dose of allopurinol given to patients should be no more than 100 mg per day, this dose can be reduced if Chronic Kidney Disease (CKD) was obtained, but maintenance can be given with 300 mg per day even if the patient has CKD. It was recommended to increase the maintenance dose of Allopurinol every 2 to 5 weeks to get an effective dose for people with gout arthritis, for this purpose it was necessary to monitor uric acid levels every 2 to 5 weeks during titration of Allopurinol (Khanna et al, 2012).

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