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Effect *of Infused Water* Pineapple *Cayenne (Ananas Comosus L Merr)* on Reducing Uric Acid Levels in Patients With *Gout* Arthritis

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Abstract

The most common disease in old age and is considered a disease that is generally recognized by the public is gout. An increase in uric acid levels is indicated by rheumatic pain in the joints, pain, redness and swelling. Efforts to search and develop medicines to treat rising uric acid levels continue. One alternative that can reduce uric acid levels is to consume cayenne pineapple-infused water. To determine the effect of cayenne pineapple-infused water on uric acid levels in gout arthritis sufferers. Using a quasi-experimental design with a control group with a sample of 44 respondents. Data analysis used univariate and bivariate analysis. Based on the characteristics of the respondents, it was found that (52.2%) were aged 45-59, female (43.2%), had at least secondary school education (50.0%), worked as a labourer (43.2%) and acid levels. mean pre-intervention urate 8.08 mg/dL, post-intervention means 5.01 mg/dL pre-control mean 8.20 mg/dL, post-control mean 8.02 mg/dL, Mann Whitney test results Posttest uric acid in the intervention group had a mean value of 11.50 mg/dL, in the control group the mean value was 33.50 mg/dL. This study found that in the intervention group, the p-value was 0.000 < 0.05. Shows that there is an effect of giving cayenne pineapple-infused water on uric acid levels in gouty arthritis sufferers.

Background

Gout arthritis is a disease in which there is an excessive accumulation of uric acid in the body, either due to increased production, decreased elimination through the kidneys, or due to increased intake of purine-rich foods. Gout occurs when body fluids are very saturated with gout due to high levels (Hartutik & Gati, 2021). Gout or gout is one of the categories of chronic non-communicable diseases (NCDs), characterized by hyperuricemia or an increase in uric acid levels in the blood. Hyperuricemia occurs when serum uric acid levels >5.7 mg/dl in women and 7.0 mg/dl in men.

Based on data World Health Organization (WHO) in 2017 the prevalence of gout patients in the world was 33.3% with a total of 1370 sufferers, increasing to 34.2% in 2018. Gout arthritis in Indonesia is ranked second after osteoarthritis which is a non-communicable disease, where the incidence rate is 24.7% and the prevalence of goutarthritis will continue to increase as age increases (Kementerian Kesehatan RI, 2018). In West Java Province as many as 8.86% (52,511 people) of gout arthritis sufferers due to gout and in the city of Cirebon the prevalence is 4.96% (Ministry of Health of the Republic of Indonesia, 2018). Based on data from the Kalitanjung Health Center in 2022, the incidence of gout arthritis was 35 people, then increased from February to March 2023 to 44 people.

The management of gout arthritis is divided into two, namely pharmacological and non-pharmacological ones. Pharmacological management of gout arthritis can be done using chemical drugs. The performance of chemical drugs can relieve pain and inflammation in the joints. In addition, pharmacological treatment causes drug dependence and also the high cost of pharmacological drugs makes people turn to non-pharmacological treatment alternatives, namely by modifying their lifestyle and returning to natural treatment (Astutik, 2020). Non-pharmacological treatment can be done by changing diet, healthy lifestyle behaviours such as consuming fruits or vegetables and herbs, and exercising regularly with activities that can reduce the possibility of gout, non-pharmacological treatment has been proven to be effective in reducing uric acid levels (Hasibuan, 2021). Therefore, non-pharmacological is an alternative to be able to control and reduce uric acid levels in patients with gout arthritis.

One of the herbs that has a rich content of antioxidants is pineapple-infused water. Infused water drinks are starting to be known and consumed by some Indonesian people because the manufacturing process is very easy but you have to pay attention to the cleanliness (Surati & Qomariah, 2017). Pineapple fruit contains vitamin C which is rich in antioxidants which are useful for protecting all body tissues against exposure to free radicals (Murtie, 2014) In addition, vitamin C is a type of vitamin that is soluble in water and has an important role in warding off various diseases (Sutanto, 2013). Vitamin C in pineapple also functions to protect purines from becoming uric acid. Apart from vitamin C, pineapple also contains minerals, iron, phosphorus, calcium, flavonoids, sodium and bromelin (Zuriati & Suriya, 2020). The flavonoid content contained in pineapples is useful as an antioxidant so that it can inhibit the action of the xanthin oxidase enzyme which can cause the metabolism of purines that form uric acid not to occur. Pineapples also contain the enzyme bromelin which can help digest proteins. In addition, bromelin enzymes also have an anti-inflammatory effect that can prevent inflammation caused by uric acid from attacking the body (Annita & Handayani, 2018).

There is a study conducted by Annita, et al. (2019) titled The Effect of Pineapple Juice Consumption on Uric Acid Levels in Gout Arthritis Patients shows that pineapple juice consumption has an effect in reducing uric acid levels with univariate analysis using descriptive statistics and bivariate analysis using a dependent T-test test with a p-value of ≤ 0.05 (Annita, Morika, & Sari, 2019). Another research conducted by Risa. K, (2020) with the title The Effectiveness of Soursop Juice and Pineapple Juice on Uric Acid Levels in the Elderly also showed a reduction in uric acid levels with the statistical tests used were Wilcoxon and Mann Whitney, the results of the statistical test calculation can be concluded to have a p-value for pineapple juice 0.002 ($p < 0.05$) and a p-value for soursop juice 0.015 ($p < 0.05$), The results show that the administration of pineapple and soursop juice can reduce uric acid levels (Risa, 2020). The disadvantage of this study is that it is inefficient and also requires a lot of tools and materials. Pineapples, in addition to being consumed by making juice, sufferers can also consume with the infused water technique to make it more economical and practical, which does not require many tools and materials.

Based on the above background, the researcher is interested in conducting a study entitled The Effect of Infused Water Pineapple Cayenne (Ananas Comosus L Merr) on Reducing Uric Acid Levels in Patients with Goutarhtritis at the Kalitanjung Health Center, Cirebon City.

Methods

This type of research is quantitative research using a Quasi-experimental design with the control group. The sample in this study amounted to 44 respondents who were divided into two groups, namely 22 participants in the intervention group and 22 respondents in the control group, the sampling technique used was purposive sampling with inclusion criteria: 1) Those who were willing to be respondents, 2) Patients with gout/gout arthritis, 3) Consumption of acid drugs and exclusion criteria: 1) Do not have physical disabilities, 2) Have acid reflux disease, 3) Have a history of allergy to pineapple. The instruments used in this study are observation sheets and GCU meters to measure uric acid levels and SOPs for making pineapple-infused water as follows: 1) Peel the pineapple and wash it thoroughly, 2) Cut the pineapple into pieces in medium size, 3) Prepare a glass/bottle filled with 500 ml of water, 4) Put the pineapple pieces in water, 5) Soak for approximately 2-4 hours, 6) Infused water is ready to serve (Fitriani, 2020). The type of data used is primary data, and the hypothesis test tool used is the test Mann-Whitney Test. This research has been declared ethical.

Result and discussion

Table 1. Frequency distribution of respondent characteristics

Age	Frequency	Percentage
25-35 Years	0	0%
36-45 Years	0	0%
46-59 Years	23	52,2%
60-74 Years	21	47,7%
Total	44	100%

Table 1 shows that the frequency distribution of respondents aged 45-59 years is 23 people (52.27%) while respondents aged 60-70 years are 21 people (47.73%). As we age, the value of uric acid levels in the elderly increases, because in the elderly there are physical changes such as decreased kidney function, reduced tubule function, decreased excretory ability, the musculoskeletal system will also have less function, bones will lose fluid and become more fragile so that this factor can increase uric acid levels in the elderly (Amalia & Setyorini, 2018). The results of this study are not to the research conducted by Bulu (2019) titled The Relationship between age, gender and Body Mass Index and Community Uric Acid Levels in Rt 39 Rw 12 Fatululi Village in 2019 stated that there was no meaningful relationship between age and gender and uric acid levels. As we age, functions in the body begin to decline so that the ability to form the urokinase enzyme is disturbed, therefore age is a factor in uric acid levels becoming increased/abnormal.

Table 2. Frequency distribution of respondents by gender

Gender	Frequency	Percentage
Man	19	43,2%
Woman	25	56,8%
Total	44	100%

Table 2 shows that the frequency distribution of respondents with female gender is 25 people (56.8%) while respondents with male gender are 19 people (43.2%). Women have a high risk of gout after menopause and are influenced by the hormone estrogen, the hormone estrogen itself plays a role in helping the excretion of uric acid to be able to pass through urine. The

reduced amount of the hormone estrogen in the blood causes a decrease in uric acid excretion through the kidneys, causing uric acid levels to increase (Putri, 2017). In line with Ayu T's (2020) research gout arthritis is more common in women, which results from women (56.8%) and men (43.2%).

Table 3. Frequency of respondents by education level

Education	Frequency	Percentage
Junior high school	22	50,0%
Senior High School	13	29,5%
College	9	20,5%
Total	44	100%

Table 3 shows that the frequency distribution of respondents with the highest level of education is junior high school with a total of 22 people (50.0%) and the lowest with a university (higher education) level of 9 people (20.5%). The source of information greatly affects the knowledge of a person, both the giver and the receiver, it depends on the knowledge, understanding and interest to explore it. A person's knowledge can be obtained through formal education and non-formal education. Knowledge itself can also be obtained through various experiences from the person so that knowledge can influence taking an action (Notoatmodjo, 2013). This research is in line with Ulfiyah (2018) explaining that respondents who have good knowledge but poor preventive behaviour can be influenced by their conditions.

Education is an effort to develop personality and abilities inside and outside school that lasts a lifetime. It is hoped that by having a high education, a person will be able to receive information more easily. In addition, the higher a person's education level, the more extensive knowledge it is expected that the person will have. However, it should be noted that a person with low education does not mean absolute low knowledge. From experience, people can remember and memorize what is recommended and what is not recommended for gout sufferers. In addition, with the advancement of technology and information, health education is informed through electronic media and the availability of adequate and close health services so that it is easier for the community to reach them.

Table 4. Frequency distribution of respondents by job

Work	Frequency	Percentage
Laborer	19	43,2%
Self employed	4	9,1%
Merchant	16	36,4%
Government employees	5	11,4%
Total	44	100%

Table 4 shows the frequency distribution of respondents with the most jobs being workers with a total of 19 people (43.2%) and the least jobs being self-employed with a total of 4 people (9.1%). Physical activity is a cause that can increase blood uric acid levels because of lactic acid production during activities, especially strenuous physical activities. Activities that are too excessive can easy to experience joint pain, in this case, it can cause gout to recur or the acid level to be high, it does not mean that the sufferer should not do activities at all, but gout sufferers are advised to continue to do activities according to their abilities (Fauzi, 2019).

Table 5. Characteristics of respondent frequency distribution based on uric acid levels

Variable	Measurement	Group			
		Intervention		Control	
		Mean	Min-Max	Mean	Min-Max
Uric Acid Levels	Pretest	8,08	7-10	8,20	7-9
	Postest	5,01	4-7	8,02	7-9

**Wilcoxon Signed Rank Test*

Table 5 shows that the frequency distribution of respondents in the intervention group with a total of 22 people before the treatment obtained a mean value of 8.08 mg/dL, while the mean value after being given treatment was 5.01 mg/dL. In the control group with a total of 22 people before the treatment, a mean value of 8.20 mg/dL was obtained, while after observation the mean value was 8.02 mg/dL. Gout is a disease related to high levels of uric acid in the blood. Gout attacks are sudden, recurrent and accompanied by arthritis which is very painful in the joints (Onibala, Adrian, & Sanger, 2019).

Table 6. Mean uric acid levels before and after treatment in the intervention group

Variable	**Measurement**	**Mean**	**Min-Max**	***p-Value***
Uric Acid Levels	Pretest	8,08	7-10	< 0,000
	Postest	5, 01	4-7	

**Wilcoxon Signed Rank Tes.t*

Table 6 shows that the statistical data on the measurement of uric acid levels in the intervention group obtained pretest results with a mean value of 8.08 mg/dL while the post-test obtained a mean value of 5.01 mg/dL. The results of the Wilcoxon Signed Rank Test obtained a p-value of < 0.000. This means that there is a difference in the measurement results before and after the intervention is given. Pineapple fruit contains vitamin C, minerals, iron, phosphorus, calcium, sodium, and bromelin. Vitamin C in pineapple fruit is very good for gout because vitamin C can help increase the excretion (elimination) of uric acid through urine. In line with research conducted by Sulisttyowati (2020), the average value of uric acid levels after being given treatment was 6.707 mg/dl (Onibala et al., 2019).

Pineapple fruit contains flavonoids as antioxidants so that it can inhibit the action of the enzyme xanthine oxidase which can cause the metabolism of purine that forms uric acid not to occur (Juniati, 2019). To overcome gout, you can consume certain fruits and vegetables. Fruits that can be consumed contain vitamin B5 and vitamin C because both vitamins are very useful in playing a role in the process of breaking down uric acid so that it can help remove it from the body. Vitamin C in these fruits functions to maintain the body's uric acid levels to remain normal. One of the fruits that contains high vitamin C is pineapple. This vitamin C works by helping the urinary system associated with the kidneys to excrete more excess uric acid. In addition, it is also useful to keep purines from being produced into uric acid.

Table 7. Average uric acid levels before and after observation in the control group

Variable	**Group**	**Mean**	**Min-Max**	***p-Value***
Uric Acid Levels	Pretest	8,20	7-9	< 0,000
	Postest	8,02	7-9	

**Wilcoxon Signed Rank Test*

Table 7 shows that the statistical data for the measurement of uric acid levels in the control group obtained pretest results with a mean value of 8.20 mg/dL while the post-test obtained a mean value of 8.02 mg/dL. The results of the Wilcoxon Signed Ranks Test obtained a p-value value of 0.000< 0.05. This means that there is a difference in the decrease in the results of uric acid level measurement in the control group. Clinically, purines are obtained from food, with a diet that contains excessive purines is a factor that causes people to experience gout. This is realized by the public that excessive consumption of purines can increase uric acid levels in the blood by paying attention to a diet that contains purines including the frequency of meals, types of foods, and the amount of food. In addition to a diet that can affect the reduction of uric acid levels, drugs are also included in them (Ridhoputrie, Karita, Romdhoni, & Kusumawati, 2019).

Table 8. Effect of pineapple cayenne infused water on uric acid levels in patients with gout arthritis

Variable	**Treatment**	**Group**		***p-Value***
Uric Acid Levels	Postest	Mean Intervention	Mean Control	<0,000
		11,50	33,50	

**Mann-Whitney Test*

Table 8 of 44 respondents showed that the intervention group obtained a mean value of 11.50 mg/dL after treatment, while in the control group, the result was obtained after observation of a mean value of 33.50 mg/dL. The results of the Mann-Whitney Test showed a p-value of 0.000< 0.05, which means that there was an effect of giving cayenne pineapple-infused water on uric acid levels in patients with gout arthritis. Cayenne pineapple has a water content that is not too much compared to other types of pineapples, besides that it has a high vitamin C content, so it can reduce high uric acid levels. research from Prambudi (2019) said that the average vitamin C level of cayenne pineapples is higher than other types of pineapples, which is 0.81%. Infused water has vitamin content from the fruit used, for example, vitamin C, the role of vitamin C in warding off various diseases, namely as an antioxidant to neutralize free radicals. The mechanism of action of these substances is antioxidants from flavonoids and vitamin C, inhibiting the performance of the enzyme xanthine oxidase which fails uric acid formation (Prambudi, 2019).

Conclusion

The results of the study on the effect of cayenne pineapple-infused water on the reduction of uric acid levels in patients with gout arthritis in the working area of the Kalitanjung Health Centre, it was concluded that there is an effect of cayenne pineapple-infused water on the reduction of uric acid levels in patients with gout arthritis.

Reference

Amalia, E., & Setyorini, D. I. (2018). Korelasi Kadar Asam Urat dengan Derajat Keganasan Kanker Kolorektal. *Cermin Dunia Kedokteran, 45*(7), 487-489.

Annita, A., & Handayani, S. W. (2018). Hubungan diet purin dengan kadar asam urat pada penderita gout arthritis. *Jurnal Kesehatan Medika Saintika, 9*(2), 68-76.

Annita, A., Morika, H. D., & Sari, I. K. (2019). Pengaruh Konsumsi Jus Nanas Terhadap Kadar Asam Urat Pada Penderita Arthritis Gout. *Jurnal Kesehatan Saintika Meditory, 2*(1), 13-18.

Astutik, N. F. (2020). *Pengaruh Pemberian Kompres Hangat Jahe Merah Terhadap Tingkat Nyeri Asam Urat.* STIKes Insan Cendekia Medika Jombang,

Fauzi, M. (2019). *Hubungan Aktivitas Fisik dengan Kadar Asam Urat di Padukuhan Bedog Trihanggo Gamping Sleman Yogyakarta.* Universitas' Aisyiyah Yogyakarta, Yogyakarta.

Fitriani, N. (2020). *Studi Literatur tentang Pengaruh Terapi Infused Water untuk Kesehatan.* Universitas Muhammadiyah Malang,

Hartutik, S., & Gati, N. W. (2021). Pengaruh Kompres Kayu Manis (Cinnamomun Burman) Terhadap Nyeri Arthritis Gout Pada Lansia. *Jurnal Ilmu Keperawatan Komunitas, 4*(2), 40-51.

Hasibuan, R. S. (2021). *Asuhan Keperawatan gangguan nyeri kronis pada keluarga Bapak S khususnya Ibu J dengan asam urat meningkat tahap lansia Di Sumberrejo Kemiling Bandar Lampung Tahun 2021.* Poltekkes Tanjungkarang,

Juniati, O. (2019). Pengaruh pemberian ekstrak bonggol nanas terhadap penurunan kadar asam urat pada tikus putih rnjantan hiperurisemia.

Kementerian Kesehatan RI. (2018). Riset Kesehatan Dasar (Riskesdas 2018). In: Kementerian Kesehatan RI.

Murtie, A. (2014). *Kupas tuntas pengobatan tradisional*. Jogjakarta: Trans Idea Publishing,.

Notoatmodjo, S. (2013). *Pendidikan dan perilaku kesehatan*. Jakarta: PT. Rineka Cipta.

Onibala, C. O., Adrian, A. M., & Sanger, J. B. (2019). *Diagnosis Penyakit Hipertensi Menggunakan Algoritma Decision Tree C5. 0.* Universitas Katolik De La Salle Manado,

Prambudi, H. (2019). Perbandingan kadar vitamin c pada buah nana s madu (queen) dan nanas subang (cayenne) yang dijual di pasar Kanoman Kota Cirebon. *Sumber, 3*(70), 0-79.

Putri, N. a. K. S. (2017). *Pengukuran kadar asam urat pada perempuan usia≥ 40 tahun (Studi Warga Dusun Jatimenok RT 01 RW 05 Desa Rejosopinggir Kecamatan Tembelang Kabupaten Jombang).* STIKES Insan Cendekia Medika Jombang,

Ridhoputrie, M., Karita, D., Romdhoni, M. F., & Kusumawati, A. (2019). Hubungan Pola Makan Dan Gaya Hidup Dengan Kadar Asam Urat Pralansia Dan Lansia Di Wilayah Kerja Puskesmas I Kembaran, Banyumas, Jawa Tengah. *Herb-Medicine Journal: Terbitan Berkala Ilmiah Herbal, Kedokteran dan Kesehatan, 2*(1).

Risa, K. (2020). *Efektivitas jus sirsak dan jus nanas terhadap kadar asam urat pada lansia di RW 13 Malangan, kelurahan Giwangan, kecamatan Umbulharjo Yogyakarta Tahun 2020.* STIKES Bethesda Yakkum Yogyakarta,

Surati, S., & Qomariah, N. (2017). Tingkat Keamanan Minuman Infused Water Dengan Diversifikasi Penyimpanan Yang Berbeda. *Jurnal Riset Kesehatan, 6*(1), 13-19.

Sutanto, T. (2013). *Deteksi, Pencegahan, Pengobatan asam urat*. Jakarta: Buku Pintar.

Zuriati, Z., & Suriya, M. (2020). Efektivitas Pemberian Jus Nenas Dalam Menurunkan Kadar Asam Urat. *Journal Ilmu Kesehatan. Universitas Binawan Jakarta Timur*.