

Effect Of Celery Extract (*Apium graveolens* Linn) On Uric Acid Reduction In Elderly In Iman Clinic, Medan Labuhan District, Medan City

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Abstrak

Perubahan gaya hidup masyarakat menjadi pola hidup yang tidak sehat telah mendorong terjadinya berbagai penyakit yang mempengaruhi metabolisme tubuh. Salah satu diantaranya adalah penyakit asam urat atau yang disebut hiperurisemia. Hiperurisemia adalah asam yang terbentuk akibat metabolisme purin (adenin dan guanin) di dalam tubuh, purin berasal dari makanan yang mengandung protein, seperti daging, jeroan, kacang-kacangan dan lainnya. Secara umum kandungan seledri (*Apium graveolens* linn) terdiri dari karbohidrat, fenol (flavonoid) yang bekerja untuk memotong jalur metabolisme purin. seledri juga mengandung apiin yang bekerja sebagai diuretic yang berfungsi mengeluarkan purin dari ginjal, sehingga kadar asam urat bisa menurun. Metode: Penelitian ini menggunakan studi eksperimen dengan metode pretest dan posttest dimana sampel yang digunakan sebanyak 36 orang yang dibagi atas kelompok eksperimen dan kelompok kontrol, sampel merupakan lansia ≥ 60 tahun yang mengikuti program program pengelolaan penyakit kronik di klinik IMAN, Martubung. hasil penelitian ini menunjukkan hasil rata-rata pretest 8.533 mg/dl dan posttest 6.516 mg/dl. Terdapat penurunan kadar asam urat sebesar 2.017 mg/dl pada kelompok eksperimen, pada kelompok Kontrol hasil rata-rata pretest 7.696 dan posttest 7.494 terjadi penurunan sebesar 0.202 mg/dl. Terdapat pengaruh ekstrak seledri (*Apium graveolens* Linn) terhadap penurunan kadar asam urat pada lansia di klinik Iman.

Kata Kunci: Seledri, Asam Urat

Abstract

Changes in people's lifestyles into unhealthy lifestyles have encouraged the occurrence of various diseases that affect the body's metabolism. One of them is gout disease or what is called hyperuricemia. Hyperuricemia is an acid that is formed due to the metabolism of purines (adenine and guanine) in the body, purines come from foods that contain protein, such as meat, offal, nuts and others. In general, the content of celery (*Apium graveolens* Linn) consists of carbohydrates, phenols (flavonoids) which work to cut off the purine metabolic pathway. Celery also contains apiin which works as a diuretic which functions to remove purines from the kidneys, so that uric acid levels can decrease. This study used an experimental study with pretest and posttest methods where the sample used was 36 people who were divided into the experimental group and the control group, the sample was elderly 60 years who took part in the chronic disease management program at the IMAN Clinic, Martubung. Research results This shows the average result of pretest 8,533 mg/dl and posttest 6,516 mg/dl. There was a decrease in uric acid levels of 2,017 mg/dl in the experimental group, in the control group the average results of pretest 7,696 and posttest 7,494 there was a decrease of 0.202 mg/dl. There is an effect of celery extract (*Apium graveolens* Linn) on reducing uric acid levels in elderly at IMAN Clinic.

Keywords : *Celery, Gout.*

INTRODUCTION

Hyperuricemia is an acid that is formed due to the metabolism of purines (adenine and guanine) in the body, purines come from foods that contain protein, such as meat, offal, nuts and others, there are even studies that say that coffee can also increase blood uric acid levels. . Purine consumption is one of the factors that is closely related to hyperuricemia. Foods that are high in purines increase uric acid levels. This can occur if you eat purine-rich foods continuously such as brain, intestines, and tripe. Food sources of purines contribute \pm 50% of uric acid in the blood. 1 2 Hyperuricemia is closely associated with an increased risk of cardiovascular disease, kidney disease, diabetes, and obesity. Blood uric acid levels above 7 mg/dl in men and 6mg/dl in women are used as limits for hyperuricemia. When uric acid levels increase beyond this value, it is said to be hyperuricemia.3 Hyperuricemia can cause various complications, for example a tofu or hard lump that appears around the area of inflammation. Uric acid that precipitates and mixes with calcium in the kidneys will cause kidney stones and permanent joint damage. The body's productivity will decrease and be followed by interference with the disposal of uric acid by the kidneys. A normal body excretes uric acid through urine reaches 300-600 mg per day and the rest will be excreted through digestion.4

WHO data estimates that around 335 million in the world have hyperuricemia. The prevalence of gout in Indonesia is increasing, according to Riskesdas 2018, the prevalence of gout based on the diagnosis of health workers in Indonesia is 11.9% and based on diagnosis or symptoms 24.7% when viewed from age, the prevalence is high at age 75 years (54.8%). There are also more female patients (8.46%) than male patients (6.13%). Until now, North Sumatra, North Sulawesi, and South Sulawesi are the 3 regions that have the largest prevalence of hyperuricemia in Indonesia, in the rural population in Central Java, the prevalence of hyperuricemia was found to be 24.3% in men and 11.7% in women. Hyperuricemia was significantly higher in the elderly female than male, due to the menopause process.5 Indonesia's biological wealth counts about 9,600 species of plants with medicinal properties, and about 300 species of plants are used as ingredients for traditional medicines. One of the plants that have the potential as traditional medicinal plants is celery (*Apium graveolens* linn).6

Currently, people's understanding of the use of celery is still limited as a vegetable commodity or as a food flavoring, they still rarely recognize celery as a plant that is full of potential in maintaining health and its benefits in preventing, treating and maintaining disease.7

In general, the content of celery (*Apium graveolens* Linn) consists of carbohydrates, phenols (flavonoids) which work to cut off the purine metabolic pathway. Celery also contains apiin which works as a diuretic which functions to remove purines from the kidneys, so that uric acid levels can decrease. In addition, in celery there are also alkaloids that are able to inhibit the synthesis and release of leukotrienes so that they can suppress and reduce the frequency of attacks and relieve pain.8

The presence of compounds such as limonene, selenin, flavonoids, vitamins A and C makes this plant often used in various traditional medicines and has the potential to maintain our fitness and health.10 based on research, this plant contains twice the amount of vitamin C compared to Vitamin C in citrus fruits, besides that it also contains vitamins B, and E, also contains folic acid, phosphorus, potassium and Zn, besides that celery also contains lots of phenolic acids such as caffeic acid, p-coumaric acid, and ferrulic acid. , while the flavonoid content consists of apigenin, luteolin, and kaempferol.9

Based on research with the title of differences in the effectiveness of bay leaves and celery leaves on uric acid values, it was found that 94.4% of respondents who were given celery boiled water experienced a decrease in uric acid levels. in male white rats can have the effect of reducing uric acid levels in male white rats.10 Based on the above background, it can be concluded that the content in celery (*Apium graveolens* linn) can reduce uric acid levels, and considering that gout is easy to attack the elderly, therefore researchers are interested in discussing the title of the effect of celery extract on gout in the elderly.

METHODS

This type of research is quantitative research, using an experimental design. The research design used was a non-equivalent control group design, namely research conducted with a pre-test in both groups, followed by intervention in the experimental group. The flow of this research is the group used by the research group (group experiment) was given a pre-test and then continued with the treatment / treatment, namely by giving celery extract after that was given celery post-test, the control group was given a placebo and measurement of uric acid after and before being given a placebo (pre test-post test). The study lasted for 30 days.

The sample in this study were all elderly patients who took part in the chronic disease management program (PROLANIS) at the Faith Clinic, Medan Labuhan District, Medan City. With the criteria of age above 60 years, willing to be a respondent and not allergic to celery. The data collected in this study is primary data, namely data taken directly through a uric acid level measuring device (Easy Touch GCU Meter Device) for measuring blood uric acid levels in elderly patients who take PROLANIS at Faith Clinic, Medan Labuhan District in Medan City, as well as the respondent data recapitulation sheet containing the name, age, gender, and the results of measuring uric acid levels before and after administration of celery extract. The results of this study were analyzed by Univariate and Bivariate using Shapiro-Wilk because data < 50 after normalizing the data with the Shapiro-Wilk test obtained data with normal distribution, then researchers analyzed using paried t-test, using the alternative Wilcoxon and Mann test. -withney.

RESULTS AND DISCUSSION

Table 1 Average Distribution by Age of Respondents

Age	Men	Woman	n
60-65	2	5	7
66-69	5	8	13
70-74	2	9	11
75-80	2	3	5
Total	11	25	36

Based on table 1, it is found that the number of respondents aged 60-64 years is 7 people with 2 men and 5 women. Ages 65-69 years amounted to 13 people with 5 men and 8 women. Age 70-74 years amounted to 11 people with 2 men and 9 women, and the last age 75-80 years amounted to 5 people with 2 men and 3 women. The total number of samples was 36 people with 11 men and 25 women.

Table 2 Characteristics of Respondents by Gender

	sex	n	(%)
Experimental Group	Men	4	22.2%
	Woman	14	77.8%
Control Group	Men	7	38.9%
	Woman	11	61.1%
Total		36	100%

Based on table 2, the results obtained are 36 respondents, the experimental group of 18 respondents consisting of 4 people (22.2%) men and 14 people (77.8%) women, while the control group consisted of 7 people (38.9%) men. -male and 11 (61.1%) female.

Table 3 Characteristics of Respondents Based on Aric Acid Results

Variable	penurunan	P value
Experimental Group	2.017 mg/dl	0.000
Control Group	0.202 mg/dl	

The results of the pretest and posttest measurements of uric acid levels in the experimental group showed a decrease of 2,017 mg/dl. The control group decreased by 0.202 mg/dl. Based on the average value, a P value of 0.000, it can be concluded that there is an effect of celery extract on reducing uric acid levels.

DISCUSSION

The average age of respondents in the experimental group was 68.16 years while in the control group was 69.77 years, the youngest age was 60 years while the oldest age was 80 years. Research conducted by Yanti Rosita states that one of the risk factors for hyperuricemia is age above 45 years, this occurs due to a decrease in kidney function in the process of excreting the rest of the body's metabolism so that uric acid increases from normal values.¹⁰

In this study, 25 people were female while 11 were male. Research conducted by Fakhruddin stated that the percentage of uric acid incidence in women is lower than men, but uric acid levels will increase in women after menopause. Women who have not been menopausal have high levels of the hormone estrogen, this hormone helps excrete uric acid through the urine so that uric acid levels in women who have not menopause are generally normal.^{11 12} Table 3 shows a decrease in the average uric acid level of 2,017 mg/dl in the experimental group and in the control group there is a decrease in the average value of uric acid levels of 0.202 mg/dl. Based on the results of the analysis using the Wilcoxon test, a P value of 0.000 ($p < 0.005$) was obtained. This shows that celery extract has the effect of celery extract on reducing uric acid levels in the elderly.

These results are supported by previous research conducted by Karim Dolati which stated that celery extract significantly inhibited xanthine oxidase activity in hyperuricemic rats. Another study conducted by Usman, the study compared the pretest value with the posttest value with the duration of administration for two weeks, it was found that the average decrease in uric acid levels was 2.15 mg/dl.^{13 14} Celery is known to have active compounds, namely flavonoids and 3-n butylphthalide (3nB) these compounds inhibit the xanthine oxidase enzyme so that uric acid levels will decrease. Celery also contains apigenin and Apiin can be used to treat excess uric acid by increasing urinary excretion so that uric acid can be excreted along with urine. In addition, celery can also be used as a medicine to reduce fever, rheumatism, high blood pressure and improve impaired blood function which functions as an anti-inflammatory. The ability of flavonoids to inhibit xanthine oxidase activity is closely related to their structure, the structure of flavonoids generally consists of three benzene rings where the C atom in the structure has a double bond where the structure easily binds to the xanthine oxidase enzyme so that the formation of xanthine is reduced and the production of uric acid is reduced.^{15 16} Celery itself is a therapy without side effects, it is safe and easy to find and cheap. So that researchers highly recommend it as a therapy in lowering uric acid levels to people with high uric acid levels.

CONCLUSION

After conducting research on the effect of giving celery extract (*Apium graveolens* Linn) on reducing uric acid levels in the elderly at the IMAN clinic, Medan Labuhan District, Medan City, it was concluded that there was an effect of celery extract on reducing uric acid levels in the elderly.

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