

THE EFFECT OF CONSUMING NIKE FISH ON BLOOD URIC ACID LEVELS OF UNIVERSITY BINA MANDIRI GORONTALO EMPLOYEES

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Abstract

Nike fish (duwo, family Gobiidae) is unique because of its periodic appearance so it is eagerly awaited and consumed in large quantities. Based on the family similarities between Nike and Anchovy, it can be estimated that the purine in Nike is quite high (purine in Anchovy is 411 mg/100g). Consuming large amounts of Nike, especially in groups recommended for a low-purine diet (100-150 mg purine/day), can impact high uric acid levels in the blood and lead to the emergence of Gout Arthritis. This research aimed to determine the effect of consuming Nike on uric acid levels of University Bina Mandiri (UBMG) employees. This research is the quantitative experimental type of research, which was carried out to determine the effect of consuming Nike fish on uric acid levels before and after. Data was collected from 31 employees through interviews and measuring uric acid levels before and after giving Nike. The study's results found an increase in uric acid levels before and after the intervention of 5.7 mg/dl and 6.2 mg/dl. Statistical analysis of the ANOVA test obtained a P value or significance before treatment of 0.003, and after treatment of 0.002 or a probability value of <0.05; the research conclusion is that giving Nike had a significant effect on the uric acid levels of employees at UBMG.

Keywords: Consuming; Nike fish; Uric acid level.

INTRODUCTION

Nike fish (duwo) is a term used by the public to refer to a type of schooling of small fish with a length of 2-4 cm. The shape is similar to that of small and smooth anchovies, and these two types of fish are still members of the Gobiidae family. Nike fish, in Latin, is called *Awaous melanocephalus* and is thought to be a native fish (native species), considering its cycle characteristics and unique life. They live in groups and behave much like salmon. This fish is unique because of its cycle of appearing in large numbers in one particular location. Especially for like fish, this fish in large numbers in coastal sea waters to the mouth of the Bone River in Gorontalo City only lives in a few lakes in Sulawesi, such as Lake Tondano (Manado) and appears at the end of every month on the Hijri calendar and is a source of food wealth in the region (1).

There has been little scientific study of Nike fish, limited to the spatial-temporal abundance of these fish. Research shows that Nike fish appear every month of the month at the end of the evening, and their presence is in the form of schooling, with the ruaya area from the coast entering the river mouth and then heading upstream with water temperatures ranging from 28-30°C (2).

Gorontalo Bay, the estuary of the Bone River, is part of the Tomini Bay area. Nike, a school fish larva appearing in Estuary Bone only a few days monthly, suits the prima donna of the community and fishermen in Gorontalo. Any technical matters related to "nike" fishing have never been reported using a structured method (3). Nike is a very popular

food with Gorontalo residents, both young and old, and is made in various menus, including perkedel Nike, stir-fry, and pipes. Because of its periodic appearance, residents eagerly await its presence, and it is consumed in quite large quantities. When fresh, most of the Nike fish content consists of water (around 70 per cent) and protein (16 per cent). Apart from that, Nike fish also contains calcium and phosphorus, which are good for growth. There is also zinc and iron (4). Citing several studies, Nike fish also contains omega 3 and 6 fatty acids, which play an important role in a baby's brain development. Then, there are also ARA (arachidonic acid) and EPA (Eicosapentaenoic Acid), polyunsaturated fatty acids that are good for fetal development. The purine content contained in Nike fish has yet to be studied much. Still, based on the family similarities between Nike fish and anchovies, it can be estimated that the purine content contained in Nike fish is quite high (purine in anchovies is 411 (mg/100g)) (5). In daily food, the amount of purine consumed is around 600-1000 mg/day. A low-purine diet only allows one to consume foods containing around 100-150 mg of purine/day. So, it can be said that it is not safe for hyperuricemia sufferers to consume purines above 150 mg/day (6).

Hyperuricemia or gout, also known as Gout Arthritis, is a disease that attacks the joints and surrounding structures, characterized by symptoms of tingling and aches, pain, swelling, redness and heat in the joints. The causes of gout are divided into two, namely primary gout, caused by genetic and environmental factors, and secondary gout,

caused by complications with other diseases such as hypertension. Scientifically, everyone has uric acid, but it should not exceed normal levels. Normal uric acid levels in men range from 3 - 7.2 mg/dl and in women 2 - 6 mg/dl (6).

Based on the results of Basic Health Research (Riskesdas) in 2018 show that the prevalence of joint disease in Indonesia is 11.1%, those aged 55-64 years reached 15.5%, and those aged 65-74 years reached 18.6% with the largest total number being dominated by women at 8.5% compared to men at 6.1%. This can be seen from the number of gout sufferers who exist, and the majority are from the age of 45 years to 74 years, with the pre-elderly and elderly categories having excessive uric acid levels—11.9%. The prevalence of gout arthritis in the region is in Aceh at 18.3%, West Java at 17.5%, and Papua at 15.4%. The highest prevalence by region is in Bali Province at 19.3%, and the prevalence in Gorontalo Province is 10.4% (7)(8).

The prevalence of joint disease in Indonesia is also divided based on age. 55-64 years is 45%, 65-74 years is 51.9%, and 75 years and over is 54.8%. With his height, 2 prevalence rates for joint disease in the elderly, causing joint disease to occur in second place after hypertension (9).

Gender, BMI, carbohydrate intake, and purine intake are related to the incidence of gout. Afnuhazi's research on the elderly shows that gender and obesity are associated with the incidence of gout in the elderly (10).

In general, purines are obtained from food; a diet containing excessive amounts of

purines is a factor that causes people to experience gout. Foods high in purines will cause high uric acid levels in the blood. Nike is a food that is high in protein, especially purine. In Nike, which was subjected to drying and salting, the highest protein content was at 25.57% (11). In Dunga's research, it was found that there was a relationship between diet and uric acid levels (12).

Based on the description above, consumption of Nike in large quantities, especially in groups recommended for a low-purine diet, can impact high levels of uric acid in the blood, impacting the emergence of Gout Arthritis. Apart from that, this situation will reduce the quality of life and productive human resources, and a solution must be found. No similar yet to be ach has been conducted in Indonesia, encouraging researchers to research to find out the effect of giving Nike fish on blood uric acid levels in UBMG employees.

METHOD

This research is included in the quantitative experimental research, which was carried out to determine the effect of Nike fish on uric acid levels before and after consumption. The variables used in this research are Nike fish consumption as the independent variable and uric acid levels as the dependent variable. I conducted over 2 months, from July 2023 to August 2023. The Population in this research is all employees of Bina Mandiri University Gorontalo, aged more than 25 years, so the total sample for this research is 31 people. The research approach used is quantitative research with descriptive

statistical analysis. Data collection techniques used questionnaires and assessment sheets with bivariate analysis techniques carried out with 2 tests, the pre-test and post-test with the ANOVA test (13).

RESULTS AND DISCUSSION

In this study, the characteristics of respondents based on age, gender and body weight obtained the following results:

Table 1. Characteristics of respondents at Bina Mandiri University, Gorontalo

The characteristics of respondents	N	Percentage (%)
Ages:		
26-30	5	16,1%
31-40	15	48,4%
41-50	7	22,6%
51-56	4	12,9%
Total:	31	100,0%
Gender:		
Male	12	38,7%
Female	19	61,3%
Total:	31	100,0%
Body Weight:		
38-50	4	12,9%
51-60	14	45,2%
61-70	7	22,6%
71-80	5	16,1%
81-90	1	3,2%
Total:	31	100,0%

Sources: Primary data, 2023

Based on Table 1, the age characteristics of respondents showed that the age range of 31-40 years was ranked largest in terms of number, namely 15 employees or 48.4%. Meanwhile, if we look at gender

characteristics, women occupy the top place, namely 19 people (61.3%). For Body Weight Characteristics, the body weight is dominated by between 51-60 kg (45.2%) or 14 people out of a total of 31 sample people.

Table 2. Observation value of the results of giving pre-post Nike fish to respondents

No	Age	Gender	BW	Uric Acid Level		Increase/Decrease	Note
				Pre-test	Post-test		
1.	27	P	65	3,6	5,9	2,3	Increase
2.	36	P	50	4,6	5,5	0,9	Increase
3.	28	P	53	4,3	4,9	0,6	Increase
4.	37	P	55	5,1	5,7	0,6	Increase
5.	56	P	45	5,9	6,5	0,6	Increase
6.	26	P	69	5,9	6,5	0,6	Increase
7.	52	P	38	6,1	6,7	0,6	Increase
8.	45	L	75	4,8	5,3	0,5	Increase
9.	30	P	60	5,0	5,5	0,5	Increase
10.	41	P	80	5,5	6,0	0,5	Increase
11.	41	P	75	5,7	6,2	0,5	Increase
12.	34	P	72	5,8	6,3	0,5	Increase
13.	39	L	60	5,9	6,4	0,5	Increase
14.	34	P	57	5,9	6,4	0,5	Increase
15.	40	L	55	6,0	6,5	0,5	Increase
16.	54	P	63	6,0	6,5	0,5	Increase
17.	39	L	60	6,2	6,7	0,5	Increase
18.	32	L	63	6,5	7,0	0,5	Increase
19.	31	P	44	5,1	5,5	0,4	Increase
20.	33	L	90	5,1	5,5	0,4	Increase
21.	32	P	63	5,5	5,9	0,4	Increase
22.	29	P	51	5,5	5,9	0,4	Increase
23.	48	P	52	5,8	6,2	0,4	Increase
24.	39	L	56	5,9	6,3	0,4	Increase
25.	32	L	79	7,1	7,5	0,4	Increase
26.	41	L	58	7,7	8,1	0,4	Increase
27.	54	L	60	6,2	6,5	0,3	Increase
28.	34	P	57	5,7	5,9	0,2	Increase
29.	33	P	63	6,3	6,5	0,2	Increase
30.	42	L	65	7,5	6,9	(-0,6)	Decrease
31.	49	L	60	5,8	5,6	(-0,2)	Decrease
Mean				5,7	6,2		

Sources: Primary data, 2023

Based on Table 2, it is known that male and female employees with an age range of 26-56 and a body weight of 38-90 have an average pre and post-intervention value of 5.7 mg/dl and 6.2 mg/dl. This shows that there was an increase in uric acid levels before treatment and after treatment. In the statement of respondents who had decreased results, the respondents consumed coffee when the Nike

fish intervention was given, where the polyphenol content in coffee is thought to inhibit the work of xanthine oxidase, thereby reducing uric acid levels. One respondent did not consume this food during the Nike fish intervention.

In the test using the ANOVA test, the results obtained were:

Table 3. PreTest – Anova Test

Variable	Sum of squares	Df	Mean Square	F	Sig
Between Groups	3.071	2	1.535	7.453	<.003
Within Groups	5.768	28	.206		
Total	8.839	30			

Information: Pre Test – Anova Test, 2023; P=0.003 ($\alpha < 0.005$, Signifikan)

Table 4. Post-Test Anova Test

Variable	Some of squares	Df	Mean Square	F	Sig
Between Groups	2.746	2	1.373	8.113	<.002
Within Groups	4.738	28	.169		
Total	7.484	30			

Information: Post Test Anova Test, 2023; $P < \alpha$

Based on the table above, it can be seen that in the ANOVA test, there is a P or significant value before the treatment with a significant value of .003 or a probability value of <0.05. After the treatment, a significant value of .002 or a probability value of <0.05 is obtained. This shows a significant influence between before and after the treatment of giving Nike fish to the uric acid levels of employees at UBMG.

Based on the research results, it was found that the value of uric acid levels increased before and after giving Nike fish from an average of 5.7 to 6.2. From age characteristics, it was found that the increase in uric acid levels was greater in respondents aged 41-56 years. This is based on research conducted by Afnuhazi, which found that increasing age affects the decline in body function. Each experiences these changes differently; there are those whose rate of decline is fast and dramatic, and there are also those whose changes are more insignificant. In the elderly, cells decline due to ageing, resulting in organ weakness, physical decline, and the emergence of various diseases, such as increased uric acid levels (10).

The research also found increased uric acid levels were more common in men. This is in line with Firdayanti's 2019 research. Uric acid levels in men increase as a person ages.

The highest prevalence occurs more predominantly in men until they reach the age of 30 years. Still, after the age of 50 years, the increase in uric acid levels in women also increases rapidly. This happens because men do not have the hormone estrogen, which can help get rid of uric acid, while women have the hormone estrogen, which helps get rid of uric acid through urine (14).

Apart from that, the results of previous research that supports this research are those carried out by Firdayanti, who stated that obesity or being overweight is a form of malnutrition and metabolic disorders. Obesity is a characteristic of the Population of gout sufferers, but not all gout sufferers are fat; even being thin does not rule out the possibility of developing gout. Obesity occurs due to consuming more calories than the body needs, and obesity plays a role in the occurrence of gout (14).

Of the 31 people who consumed Nike, only 2 people experienced a decrease in blood uric acid levels, so consuming Nike in amounts that exceed requirements can increase blood uric acid levels. This aligns with Kussoy and Dunga's research, which links eating foods high in purine to uric acid levels (12)(15). However, this differs from the results of Irmawati's research, which found that genetics had a significant influence. In

contrast, uric acid levels and foods containing purines do not affect Gout arthritis (16).

The observation value of the results of giving respondents pre-post Nike fish was that 2 employees had decreased uric acid checking results because the employees consumed coffee when they were given the Nike fish intervention, and 1 of them consumed coffee and did not consume the Nike fish that had been given. It can be seen that the content contained in coffee shows that the polyphenol compounds contained in coffee, including chlorogenic acid, can inhibit the activity of the xanthin oxidase enzyme, thereby reducing uric acid levels. Chlorogenic acid compounds have pharmacological effects as antioxidants, so they can reduce the oxidative load in the body and have the ability to inhibit the activity of the xanthine oxidase enzyme so that they can reduce uric acid levels in the blood of hyperuricemia sufferers (17).

CONCLUSION

Conclusion that consuming Nike fish can increase the uric acid levels of Bina Mandiri employees. So, there is a significant influence between consuming Nike fish and uric acid levels. This can be influenced by several factors, namely age, gender and body weight.

ACKNOWLEDGE

Thank you to those who have helped in this research so the study can run smoothly.

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