Volume 20 Issue 38
Originally issued as K7



Global Journal of Medical Research: K
Interdisciplinary
Volume 20 Issue 7 Version 1.0 Year 2020
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Result of the Threshold Test for Saltiness Perception of 35 People Who Participated in the Saltiness Test using Test-Disk at the University Festival

By Naomi Katayama, Mayumi Hirabayashi & Akemi Ito

Nagoya Women's University

Abstract- Hypertension is one of the causes of many lifestyle-related diseases. In Japan, too, we are raising awareness about dietary salt reduction for hypertensive patients. Therefore, the purpose of this study was to understand the results of the salty cognitive threshold test in a wide range of age. This result can be useful data for future salt reduction instruction. Thirty-five people participated in the saltiness cognition threshold test at the university festival. The participants this time had a wide range of ages from the teens to the eighties. Participants answered that they eat out 2-3 times a week. Also, they said that the seasoning they liketo eat is a little salty. Most participants (88.6%) perceived saltiness below 1.25%. Four participants (one male and three females) recognized saltiness in 5.0%. There was no participant didn't recognize the saltiness of all. In the future, it will be better to conduct a questionnaire survey on dietary habits and compare it with the saltiness cognitive threshold test results.

Keywords: *saltiness test, cognition, threshold, test-disk, university festival.*

GJMR-K Classification: *NLMC Code: W 20.5*



Strictly as per the compliance and regulations of:



© 2020. Naomi Katayama, Mayumi Hirabayashi & Akemi Ito. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Result of the Threshold Test for Saltiness Perception of 35 People who Participated in the Saltiness Test using Test-Disk at the University Festival

Naomi Katayama [α], Mayumi Hirabayashi [σ] & Akemi Ito [ρ]

Abstract- Hypertension is one of the causes of many lifestyle-related diseases. In Japan, too, we are raising awareness about dietary salt reduction for hypertensive patients. Therefore, the purpose of this study was to understand the results of the salty cognitive threshold test in a wide range of age. This result can be useful data for future salt reduction instruction. Thirty-five people participated in the saltiness cognition threshold test at the university festival. The participants this time had a wide range of ages from the teens to the eighties. Participants answered that they eat out 2-3 times a week. Also, they said that the seasoning they liketo eat is a little salty. Most participants (88.6%) perceived saltiness below 1.25%. Four participants (one male and three females) recognized saltiness in 5.0%. There was no participant didn't recognize the saltiness of all. In the future, it will be better to conduct a questionnaire survey on dietary habits and compare it with the saltiness cognitive threshold test results.

Keywords: saltiness test, cognition, threshold, test-disk, university festival.

I. Introduction

The target daily intake of salt in the world is 6g or less. However, in Japan, the desirable daily intake of salt for adult males is 7g or less, and females it is 6.5g or less. The target amount of salt intake per day may be higher than in the world, but it is very hard for Japanese people to lower the salt intake to this level. However, from the perspective of preventing high blood pressure, the Japanese continue to make every effort to keep this target. Therefore, the purpose of this study was to collect data on the threshold level of salt concentration cognition using Taste-disks for neighboring residents who participated in the university festival and to use it as future data.

II. Materials and Methods

a) Participants

Participants were 11 males and 24 females. Table 1 shows the distribution of the participant's gender and age.

Table 1: Participant gender and age composition (number of participants)

	10's	20's	30's	40's	50's	60's	70's	80's
Male (n=11)	**7**	**0**	**1**	**2**	**0**	**1**	**0**	**0**
Female (n=24)	**5**	**10**	**0**	**5**	**1**	**2**	**1**	**0**
Total (n=35)	**12**	**10**	**1**	**7**	**1**	**3**	**1**	**0**

b) Assessment of salt taste identification

Participants were subjected to a salty cognitive threshold test using Taste-disc (made by Sanwa Chemical Research Institute). The saltiness test started from a light taste and tried a strong taste in order. The saltiness test starts form 0.3%, and the concentration increases in 5 steps up to 20.0% (0.3%, 1.25%, 5.0%, 10.0%, 20.0%). Participants placed the salt-soaked disc on the chords innervation area 2cm above the below the tongue for 3 seconds to confirm the taste. And then, participants answered to the inspector what the teste was. The inspector recorded the answers of the participants.

We also conducted a questionnaire survey on dietary habits. There are four questions, 1) Does saliva comeour? 2) Do you feel the taste? 3) Frequency of purchase of restaurants and commercial food, 4) Regular seasoning (for food was salty or thin) (Table 2).

Corresponding Author α: Nagoya Women's University, Nagoya City, Japan. e-mail: naomik@nagoya-wu.ac.jp
Author σ ρ: Graduate School of Nagoya Women's University, Nagoya City, Japan.

© 2020 Global Journals

Table 2: Questionnaire about subjective teste (Circle te applicable answer items)

	Question1	Question2	Question3	Question4
	Saliva secretion	Fee of the taste	Rrequency of purchase of restaurants and commercial products	The taste of the meal you usuallyu eat
1	Well secreted	Well feel	Almost every day	Strong taste
2	secreted	feel	4-5 times a week	Slightly dtrong taste
3	not secreted	not feel	2-3 times a week	Slightly light taste
4	so not know		once a week	Light taste
5			2-3 a month	
6			Hardly used	

c) Ethical review board

This study conducted with the approval of the Ethics Committee (Nagoya women's university 'hito wo mochiita kennkyuu ni kansuru iinnkai'). The approval number is 30-14.

III. Results

a) Saltiness recognition test result

The age distribution of the participants was seven in the teens, two in the '30s, two in the '40s, and one in the'60s, for a total of eleven males. The age distribution of the participants was five in the teens, one in the '20s, seven in the '40s, one in the '50s, three in the '60s, and one in the '70s, for a total of 24 females. Table 3 shows the results of the salty cognitive threshold test. Nine participants (four males and five females) recognized saltiness at the lowest saltiness concentration of 0.3%. Twenty-two participants (six males and 16 females) recognized saltiness in 1.25%, and four participants (one male and three females) recognized saltiness in 5.0%. The acceptable range (what we call the normal range) was 31, with 88.6% of the total. There was no participant didn't cognition of the saltiness of all (To see Table 4 and Table 5).

Table 3: Saltiness perception threshold test (TASTE DISC) results (number of participants

	0.30%	1.25%	5.00%	10.00%	20.00%	20.0% or more
Male (n=11)	4	6	1	0	0	0
Female (n=24)	5	16	3	0	0	0
Total (n=35)	9	22	4	0	0	0

Table 4: Saltiness recognition threshold test (TASTE DISC) result judgment (number of perticipants)

	Normal	Observation	Consultation
	0.3%－1.25%	5.0%－10.0%	20.0% or more
Male (n=11)	10	1	0
Female (n=24)	21	3	0
Total (n=35)	31	4	0

Table 5: Saltiness recognition threshold test (TASTE DISC) t result judgment (%)

	Normal	Observation	Consultation
	0.3%－1.25%	5.0%－10.0%	20.0% or more
Male (n=11)	90.00%	9.10%	0.00%
Female (n=24)	87.50%	12.50%	0.00%
Total (n=35)	88.60%	11.40%	0.00%

© 2020 Global Journals

The four participants recognized at a salty concentration of 5.0% were a 45-year-old male, two 21-year-old females, and a 68-year-old female (to see Table 6).

Table 6: Breakdown of people whose salt cognition threshold test (TASTE DISC) results are outside the normal range

Observation		Consultation	
5.00%	10.00%	20.00%	20.0% or more
male age 45			
female age 68			
female age 21			
female age 21			

b) Questionnaire results

The results of the questionnaire shown in Table 7-10. Most participants (n=32) answered that salivary secretion was very good (see Table 7). Twenty-two participants answered that taste detection was very well, and 12 participants answered that taste detection was well (see Table 8). The frequency of eating out was the large number of participants 2-3 times a week, with 19 (five males and 14 females) participants (see Table 9). Most of the participants (seven males and 16 females) answered that the food that they usually like to eat is light salty (see Table 10).

Table 7: Questionnaire survey items Question 1 (Saliva secretion)

	Very well	Well	Not good	Do not know	No answer
Male (n=11)	10	0	0	0	1
Female (n=24)	22	1	1	0	0

Table 8: Questionnaire survey items Question 2 (Taste perception)

	Very well	Well	Not good	No answer
Male (n=11)	8	2	0	1
Female (n=24)	14	10	0	0

Table 9: Questionnaire survey items Question 3 (Use of restaurants and commercial food)

	every day	four or five times a week	two or three times a week	once a week	two or three times a month	Hardly used	No answer
Male (n=11)	2	3	5	0	0	0	1
Female (n=24)	0	0	14	4	6	0	0

Table 10: Questionnaire survey items Question 4 (Favourite food salt taste)

	Strong salt taste	rather strong salt teste	rather light salt teste	light salt taste	No answer
Male (n=11)	1	7	2	0	1
Female (n=24)	0	16	5	1	2

IV. Discussion

Participants ranged in age from 10's to 80's. However, no one could understand the taste unless it had a strong salty taste. Four participants felt the taste with a slightly salty teste, and the age ranged from '20s to '80s. Many participants replied that the usual seasoning was a little bit strong, and it may be necessary to teach how to reduce salt. Since most participants responded that they eat out 2-3 times a week, it may be well to guide them in choosing a diet with low salt content. Based on these results, it is better to conduct a detailed questionnaire survey on dietary habits in the future and compare it with the results of the usual seasoning and salty cognitive threshold test. Since salt reduction helps prevent high blood pressure[1,2,3,4]) and other lifestyle-related diseases, we would like to continue to raise awareness. It has reported from inside and outside[5, 6]) of Japan that the effect of salt reduction can applied to both young[7]) and old people[8, 9]). It has also reported that guidance on salt reduction is effective[10.11]). We would like to provide recipes for cooking meals with low saltiness, hold cooking classes, and teach how to reduce salt.

© 2020 Global Journals

V. Conclusions

We reported the results obtained from 35 people who participated in the saltiness cognition threshold test at the university festival. The participants this time had a wide range of ages from the teens to the eighties. The salty cognitive threshold test performed using a Taste-Disc. As a result, 88.6% of participants were able to perceive saltiness at a concentration of 1.25% or less. Participants responded to the questionnaire that they had well saliva secretion and taste. Participants answered that they eat out 2-3 times a week. Also, they said that the seasoning they like to eat is a little salty. In the future, it will be better to conduct a questionnaire survey on dietary habits and compare it with the saltiness cognitive threshold test results. We also thought it would be good to increase the number of participants and consider them.

Acknowledgements

This study was supported by the research aid of Choju-iryo-kenkyu-kaihatsuhi 30-14 and the Japanese Society of Taste Technology, 2019.

References Références Referencias

1. Volos BE, Vasil'ev lu M, Masliaeva LV and Snegurskaia IA (1994). Taste receptor response to sodium chloride and naturiuresis in the workers and employees of an industrial enterprise. Likars'ka sprava 3-4.
2. Olayemi SO and Mabadeja AF (2003). Comparative study of salt taste threshold of jypertensives, their normotensive relatives and non-relatives. The Nigerian postgraduate medical journal 10 (2).
3. Elias SO, Azinge EC, Umoren GA, Jaja ST and Sofola OA (2011). Salt-sensitivity in normotensive and hypertensive Nigerians. Nigerian quarterly journal of hospital medicine 21 (1).
4. Volkov VS, Poseliugina OB, Nilova SA, Vinogradova TS, Rokkina SA and Svistunov OP (2010). Impsired gustatory sensitivity of the tongue to table salt as a risk factor of arterial hypertension. Klinicheskaia meditsina 88(1).
5. Cho H, Kinm SM, Jeong SS and Kim SB (2016). Comparison of salt taste thresholds and salt usage behaviours between asults in Myanmmar and Korea. Asia Pacific journal of clinical nutrition 25 (4).
6. Okoro EO, Uroghide GE and Jolayemi ET (1998). Salt taste sensitivity and blood pressure in adolescent school children in southern Nigeria. East African medical journal 75 (4).
7. Malaga S, Diaz JJ, Arguelles J, Perillan C, Malaga I and Vijande M (2003). Pediatric nephrology 18(5).
8. Katayama N, Kondo S, Ootake H et al (2018). Odour and Salt Taste Identification in Older Adults: Evidence from the Yakumo Study in August, 2018. Acade. J. Med. Plants 7(3) 066-071.
9. Nishimoto K, Ohhori J, Shimomugi T, Kurono Y (2005). Reproducibility of taste examination with Salsave: Control study for healthy volunteers. Japan Society of Stomato-pharyngology. pp.309-315.
10. Kusabe U, Mori Y, Okagaki M, Neriya H, Adachi T, Sugishita C, Aonomura K, Kimura T, Kishimoto N, Nakagawa H, Okigaki M, Hatta T and Matsubara H (2009). Sodium restriction improves the gustatory threshold for salty taste in patients with choric kidney sisease. Kidney international 76 (6).
11. Ferrante D, Apro N, Ferreira V, Virgolini M, Aguilar V, Sosa M, Perel P and Casas J (2011). Feasibility of salt reduction in prcessed foods in Argentina. Pan American journal of public health 29 (2).

© 2020 Global Journals