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Results of 118 People Who Participated in the University Festival and Underwent a Saltiness Cognitive Threshold Test by using SALSAVE

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Results of 118 People Who Participated in the University Festival and Underwent a Saltiness Cognitive Threshold Test by using SALSAVE

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Abstract- To prevent hypertension, which is closely related to lifestyle, especially eating habits, it is necessary to reduce salt intake. Therefore, in this study, we performed a saltiness cognition threshold test for participants at the university festival and obtained the saltiness cognition threshold results for the general public. 94 % of participants could perceive salty taste when the salty taste concentration was 1.0 % or less. On the other hand, two participants could not perceive saltiness even at a salty concentration of 1.6%, a 67-year-old female, and an 82-year-old female. We would like to continue the saltiness cognition threshold test and collect the data of participants to clarify the saltiness cognition threshold for general people.

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I. INTRODUCTION

According to the Japanese dietary intake standard²⁰²⁰, it is hoped that the daily salt intake should be 6.5g for females and 7.0g for males. After five years, it is expected that the desired intake of salt will probably change to below the international standard of 6.0 g per day. Reducing salt helps prevent various diseases. For example, High blood pressure, Kidney disease, and Heart disease ^{1,2,3,4}. For both young ⁵ and old people ^{6,7}, reducing salt helps maintain good health, and reducing salt education is effective ^{8,9}. Therefore, this study reports the result of the saltiness cognition threshold test for people who participated in the university festival. Since this result can grasp the saltiness perception threshold of the general public, it will be a useful date for future salt reduction education.

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=35)	7	17	6	2	0	1	0	2
Female (n=83)	9	33	3	6	6	7	12	7
Total (n=118)	16	50	9	8	6	8	12	9

II. MATERIALS AND METHODS

a) Participants

The participants were 35 males and 83 females (10 to 80 years old) using a salt cognitive threshold test (SALSAVE: manufactured by Advantech).

b) Assessment of salt taste identification

The salty concentration was 0.2-0.6% in 6 levels by using SALSAVE. Participants put a filter paper impregnated with salt in their mouths to check the taste and told the inspector what it tasted. The inspector recorded the participant's answer. There were 118 participants, 35 males, and 83 females.

c) Ethical review board

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

III. RESULTS

a) Saltiness recognition test result

There were 118 participants, 35 males and 83 females (to see Table 1). By age group, there were seven males in their '10s, seventeen in their '20s, six in their '30s, two in their '40s, one in their '60s, and two in their '80s. There were nine females in their '10s, 33 in their '20s, three in their '30s, six in their '40s, six in their '50s, seven in their '60s, twelve in their '70s, and seven in their '80s.

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The results using SALSVAE were as follows (see Table 2, Table 3, Table 4, and Table 5). There were 84 who could perceive saltiness at a salt concentration of 0.6%, 61 in females, and 23 in males. There were 25 who could perceive saltiness at a salt concentration of 0.8%, 16 in females, and nine in males. There were three who could perceive saltiness at a salt concentration of 1.0%, one in females and two in males. It evaluated that the salt concentration recognized as a light taste. There were four who could perceive saltiness at a salt

concentration of 1.2 %, three in females and one in males. Two women could not perceive even if the salt concentration was 1.6%.94 % of participants could perceive salty taste when the salty taste concentration was 1.0 % or less. Four participants were able to perceive saltiness with a salt concentration of 1.2%, and were 45-year-old male, 71-year-old male, 73-year-old female, and 81-year-old female. Two participants could not perceive saltiness even at a salty concentration of 1.6%, a 67-year-old female, and an 82-year-old female.

Table 2: Saltiness perception threshold (SALSVAE) results (number of participants)

	0.60%	0.80%	1.00%	1.20%	1.40%	1.60%	1.6%以上
Male (n=35)	23	9	2	1	0	0	0
Female (n=83)	61	16	1	3	0	0	2
Total (n=118)	84	25	3	4	0	0	2

Table 3: Saltiness recognition threshold test (SALSVAE) result judgment (number of participants)

	Normal 0.6% – 1.0%	Observation 1.2% – 1.6%	Consultation 1.6%以上
Male (n=35)	34	1	0
Female (n=83)	78	3	2
Total (n=118)	112	4	2

Table 4: Saltiness recognition threshold test (SALSVAE) result judgment (%)

	Normal 0.6% – 1.0%	Observation 1.2% – 1.6%	Consultation 1.6%以上
Male (n=35)	97.10%	2.90%	0.00%
Female (n=83)	94.00%	3.60%	2.40%
Total (n=118)	94.90%	3.40%	1.70%

Table 5: Breakdown of people whose salt cognition threshold test (SALSVAE) results are outside the normal range

	Observation 1.20% 1.40%	Consultation 1.60% 1.6%以上
Male 45		Female 67
Male 71		Female 82
Female 73		
Female 81		

IV. DISCUSSION

The fact that 94% of the participants could perceive saltiness with a low saltiness (1.0% or less) felt that the effect of health promotion in Japan, which had been enlightened about salt reduction for nearly 20

years, is manifested. On the other hand, two participants could not feel the salty taste even at a salt concentration of 1.6%, so we feel that it was better to continue enlightenment on salt reduction. There are good drugs on the market for hypertensives¹⁰⁾, but we would like to enlighten people to eat a lightly salted diet to prevent

lifestyle-related diseases. In the future, we think it would be good to ask questions about eating habits, give advice on improvements, and continue to raise awareness about salt reduction.

V. CONCLUSIONS

We reported the results of 188 people (35 male and 83 female) who participated in the saltiness cognitive threshold test at the university festival. Ninety-four percent of the participants were able to perceive saltiness with a low salt concentration (1.0 % or less). However, two of the participants could not perceive saltiness even at a high salt concentration of 1.6 %. We would like to continue the saltiness cognition threshold test and collect the data of participants to clarify the saltiness cognition threshold for general people. We believe that these results will be useful data for future guidance on salt reduction.

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REFERENCES RÉFÉRENCES REFERENCIAS

1. Volos BE, Vasil'ev lu M, Masliaeva LV and Snegurskaia IA (1994). Taste receptor response to sodium chloride and natriuresis 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 hypertensives, 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). Impaired gustatory sensitivity of the tongue to table salt as a risk factor of arterial hypertension. *Klinicheskaia meditsina* 88(1).
5. Malaga S, Diaz JJ, Arguelles J, Perillan C, Malaga I and Vijande M (2003). *Pediatric nephrology* 18(5).
6. 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.
7. 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.
8. 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 chronic kidney disease. *Kidney international* 76 (6).
9. Ferrante D, Apro N, Ferreira V, Virgolini M, Aguilar V, Sosa M, Perel P and Casas J (2011). Feasibility of salt reduction in processed foods in Argentina. *Pan American journal of public health* 29 (2).
10. Petrova TS, Bazhenov ND, Mazur VV and Mazur ES (2012). Gustatory sensitivity threshold to table salt and efficacy of the treatment of newly diagnosed patients with antihypertensive therapy. *Klinicheskaia meditsina* 90 (4).