Volume 20 Issue 42
Originally issued as K8

Global Journal of Medical Research: K
Interdisciplinary
Volume 20 Issue 8 Version 1.0 Year 2020
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

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Abstract- Although sugar intake did not directly lead to diabetes, the results will vary depending on age, sex, individual differences, and the nature of sugar ingested. However, the change in blood glucose level and the accumulation of fat in the body cannot neglected about the sugar intake. Also, if the sweetness recognition threshold increases, the intake of sugar may increase. Therefore, the purpose of this study was to conduct a sweetness cognitive threshold test to understand the sensitivity of the general public to sweetness. The acceptable range (sugar concentration of 2.5% or less) was 25 out of 38 participants who recognized sweetness, 65.8% of the total. Two of the 14 male participants were unrecognizable even at the sweetest concentration of 80.0%. Females had better sweetness perception threshold results than males. In the future, we think it would be good to use a questionnaire to investigate the usual eating habits and compare it with the wetness cognitive threshold test results.

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GJMR-K Classification: *NLMC Code: WD 200*

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Results of the Sweet Taste Cognitive Threshold Test of 38 Peoples Who Participated in the Sweet Teste Test using Teste-Disks at the University Festival

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

Abstract- Although sugar intake did not directly lead to diabetes, the results will vary depending on age, sex, individual differences, and the nature of sugar ingested. However, the change in blood glucose level and the accumulation of fat in the body cannot neglected about the sugar intake. Also, if the sweetness recognition threshold increases, the intake of sugar may increase. Therefore, the purpose of this study was to conduct a sweetness cognitive threshold test to understand the sensitivity of the general public to sweetness. The acceptable range (sugar concentration of 2.5% or less) was 25 out of 38 participants who recognized sweetness, 65.8% of the total. Two of the 14 male participants were unrecognizable even at the sweetest concentration of 80.0%. Females had better sweetness perception threshold results than males. In the future, we think it would be good to use a questionnaire to investigate the usual eating habits and compare it with the wetness cognitive threshold test results.

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

I. Introduction

The number of patients with diabetes is increasing year by year. Since the number of diabetic patients with complications is increasing, kidney dysfunction, advanced symptoms, and the number of patients requiring dialysis is increasing. As the national health burden in Japan has increased, maintaining national health insurance has become difficult. Therefore, in this study, we conducted a sweetness cognitive threshold test using a taste-disk on neighboring residents who participated in the university festival. Understanding this result can be used as data for future sweetness perception threshold tests. A sweetness cognitive threshold test performed on 38 people who participated in the university festival using TASTE-DISC.

II. Materials and Methods

a) Participants

Participants were 14 males and 24 females. Table 1 shows the distribution of the participant's gender and age.

Table 1: Participants 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=14)	7	0	2	4	0	1	0	0
Female (n=24)	5	10	0	5	1	2	1	0
Total (n=38)	12	10	2	9	1	3	1	0

b) Assessment of sweet taste identification

Participants were subjected to a sweet cognitive threshold test using TASTE-DISC (manufactured by Sanwa Chemical Laboratory Co., LTD). The sweetness test started from a light taste and tried a strong taste in order. The sweetness test starts form 0.3%、2.5%、10.0%、20.0%、80.0%. Participants put a filter paper impregnated with sweet in their mouth to check the taste and then 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) Saliva secretion, 2) Taste perception, 3) Use of restaurants and commercial food, 4) Favorite salt taste of food (Table 2).

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Table 2: Questionnaire about subjective teste (Circle to 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) Sweetness recognition test result

The age distribution of the participants was seven males in their'10S, two in their '30s, four in their '40s, one in their '60s, for a total of fourteen participants. The age distribution of the participants was five females in their 10s, ten in their '20s, five in their '40s, one in their '50s, two in their '60s, one in their '70s, for a total of 24 participants.

The cognitive threshold test result for saltiness was 0.3%, the lowest concentration, and fourteen (zero male and fourteen female) participants recognized saltiness. The cognitive threshold test result for saltiness was 2.5%, the second-lowest concentration, and eleven (six male and five female) participants recognized saltiness. The cognitive threshold test result for saltiness was 10.0%, the third-lowest concentration, and eleven (six male and five female) participants recognized saltiness (see Table 3).

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

	0.30%	2.50%	10.00%	20.00%	80.00%	80.0%以上
Male （n=14)	0	6	6	0	0	2
Female (n=24)	14	5	5	0	0	0
Total (n=38)	14	11	11	0	0	2

The acceptable range (we call normal range) was 25 participants, 65.8% of the total. Only two participants could not feel the sweetness or feel only the strong taste, 5.3% of the total (to see Table 4 and Table 5).

Table 4: Sweetness recognition threshold test (TASTE DISC) results judgment (number of participants)

	Normal	Observation	Consultation
	0.3%－2.5%	10.0%－20.0%	80.0%以上
Male （n=14)	6	6	2
Female (n=24)	19	5	0
Total (n=38)	25	11	2

Table 5: Sweetness recognition threshold test (TASTE DISC) t results judgment (%)

	Normal	Observation	Consultation
	0.3%－2.5%	10.0%－20.0%	80.0%以上
Male （n=11)	42.90%	42.90%	14.30%
Female (n=24)	79.20%	20.80%	0.00%
Total (n=35)	65.80%	28.90%	5.30%

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As a result, 13 participants could not perceive the light sweetness. The age ranged from the teens to the seventies. Two participants could not recognize the sweetness at all (see Table 6).

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

Observation		Consultation	
10.00%	20.00%	80.00%	80.0%以上
Male 19			Male 45
Male 19			Male 45
Male 19			
Male 19			
Female 19			
Male 38			
Male 38			
Female 49			
Female 50			
Female 68			
Female 75			

b) Questionnaire results

When asked about salivary secretion, 33 (11 males and 22 females) participants (86.8%) answered that saliva secreted well. When asked about the perception of teste, 24 (nine males and 15 females) participants (63.2%) answered that they knew the taste well. When asked about the frequency of eating out, most participants answered that they would use it 2-3 times a week. Two male participants said they were eating out every day. On the contrary, two participants answered that females rarely eat out. It turns out that males eat out more often than females. In response to questions about the usual seasoning of meals, 23 (seven males and 16 females) participants (60.5%) replied that they were eating rather heavily seasoned meals.

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

	Very well	Well	Not good	Do not know	No answer
Male (n=14)	11	0	0	0	3
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=14)	9	3	0	2
Female (n=24)	15	9	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=14)	2	4	6	0	0	0	2
Female (n=24)	0	0	12	4	6	2	0

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

	Strong taste	rather strong teste	rather light teste	light taste	No answer
Male (n=14)	2	7	3	0	2
Female (n=24)	0	16	5	1	2

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IV. Discussion

Participants ranged from 10s to 80s. Two male participants could not understand unless they had a high concentration of sweetness. It has reported that sweetness susceptibility changes in older [1)], and stressed conditions [2)]. It also reported that sweets may be eaten too much during pregnancy [3)] and quit smoking [4,5)]. It also reported that the threshold for sweetness may increase by eating a lot of sweets during childhood when the taste is created [6,7,8)]. From the results of this study, it was also found that males eat foods with a strong taste daily, because males use eating out more frequently than females. From these results, it found that a detailed questionnaire survey on dietary habits needed in the future. We would like to ask the participants in more detail about the sweetness of their everyday meals. Preventing diabetes will prevent many other related diseases. We would like to continue to educate people on low-sugar diets that can prevent postprandial hyperglycemia. In the future, we would like to continue to provide menus and recipes that have low sweetness, low sugar content, or high dietary fiber that moderates digestion and absorption.

V. Conclusions

A sweetness cognitive threshold test performed on 38 people who participated in the university festival using TASTE-DISC. Females perceived sweetness at a lower threshold than males. Two of the 14 male participants were unrecognizable even at the sweetest concentration of 80.0%. In the future, we think it would be good to use a questionnaire to investigate the usual eating habits and compare it with the wetness cognitive threshold test results.

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. Sergi G, Bano G, Pissato S, Veronese N and Manzato E (2017). Taste loss in the elderly: Possible implications of r dietary habits. Crit Rev Food Sci nutr. 22; 57 (17): 3684-3689.
2. Liang P, Jiang J, Ding Q, Tang X, and Roy S (2018). Memory Load Influences Taste Sensitibities. Front Psychol. 9: 2533.
3. Hoffman AC, Salgado RV, Dresler C, Faller RW and Bartlett C (2016). Flavour perferences in youth versus adults: a review. Tob Control 25 (Suppl 2): ii32-ii39.
4. Dipple RL and Elias JW (1980). Preferences for sweet in relationship to use of oral contraceptives and pregnancy. Horm Behav 14: 1-6.
5. Choo E and Dando R (2017). The Impact of Pregnancy on Taste Functon. Chem Senses 1; 42 (4) : 279-286.
6. Steiner JE, Glaser D, Hawilo ME and Berridge KC (2001). Comparative expression of hedonic impact: affective reactions to taste by human infants and other primates. Neurosici Biobehav Rev 25: 53-74.
7. Podzimek S, Duskovw M, Broukal Z, Racz B, Starka L and Duskova J (2018). The Evolution of Taste and Perinatal Programming of Tastte Preferences. Physiol. Res. 67(supppl. 3): S421-S429.
8. Feeney EL, Obrien SA, Scannell AG, Markey A and Gibney ER (2017). Suprathreshold measures of taste perception in children-association with dietary quality and body weight. Appetite 1; 113: 116-123.

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