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Four Types of Thickening Agents

Comparison of Subjective Dizziness

White Rice Porridge with Sticky Barley

Highlights

Questionnaire Survey Results on Lifestyle

Discovering Thoughts, Inventing Future

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Comparison of Subjective Dizziness, Tinnitus, Headache, Taste, and Smell Results by Age Group in Yakumo Town Residents Health Checkup Conducted in 2019 with Measured Taste and Smell Test Results

By Naomi katayama
Nagoya Womens University

Abstract- A self-administered questionnaire survey is conducted on various items related to health at the residents' examination conducted in Yakumo Town, Nikai-gun, Hokkaido, where population migration is small.

We will report on the results of the otolaryngology questionnaire survey conducted in 2019.

The target population is 128 males and 169 females who are residents of Yakumo Town over 40 years old, for a total of 297 people.

Self-administered questionnaire survey (feeling conscious: vertigo, tinnitus, headache, hearing, taste, smell), taste test (Salt taste: Salseve; manufactured by Advantech), and smell test (12 kinds of odors: Smell sticks; Daiichi Factory CO., Ltd).

Keywords: yakumo study, olfactory function test, taste test, the prevalence of vertigo, the prevalence of tinnitus.

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Comparison of Subjective Dizziness, Tinnitus, Headache, Taste, and Smell Results by Age Group in Yakumo Town Residents Health Checkup Conducted in 2019 with Measured Taste and Smell Test Results

Relationships among Auditory, Olfactory and Taste Function: Association with Vertigo

Naomi katayama

Abstract- A self-administered questionnaire survey is conducted on various items related to health at the residents' examination conducted in Yakumo Town, Nikai-gun, Hokkaido, where population migration is small.

We will report on the results of the otolaryngology questionnaire survey conducted in 2019.

The target population is 128 males and 169 females who are residents of Yakumo Town over 40 years old, for a total of 297 people.

Self-administered questionnaire survey (feeling conscious: vertigo, tinnitus, headache, hearing, taste, smell), taste test (Salt taste: Salseve; manufactured by Advantech), and smell test (12 kinds of odors: Smell sticks; Daiichi Factory CO., Ltd).

The obtained data were analyzed using Binomial logistic regression analysis (Excel statistics: SSRI Co., Ltd.) for statistical comparison.

As a result, more than 70% of the participants in their 40s, 60s, 70s, and 80s answered that they had no subjective vertigo.

In the case of females in their 50s, more than 10% more people than males felt subjective dizziness. (About 40% of females in their 50s felt vertigo.)

Furthermore, conscious vertigo was also associated with obesity, urinalysis, fundus, lipid, and inflammation. These items were statistically significantly related. In particular, it was highly correlated with inflammation.

Participants with dizziness were more likely to have tinnitus and headaches. There was statistical significance.

In addition, it was found that those who are consciously vertigois related to the measured olfactory test results but not related to the taste test results.

In the future, it will be necessary to investigate the conscious vertigo and degree of awareness of odors.

Keywords: yakumo study, olfactory function test, taste test, the prevalence of vertigo, the prevalence of tinnitus.

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I. INTRODUCTION

Based on the Health Promotion Law, health Japan 21 was issued as Ministry of Health, Labor and Welfare No.430 in 2012. Public health centers of local governments are conducting Health Japan 21 according to local conditions in accordance with the policy set out by the Japanese government. Currently, Health Japan 21 2nd plan is being carried out.

The Healthy Japan 21 2nd plan includes nine different types of content (nutrition and diet, physical activity and exercise, rest and mental health, tobacco, health care, dental health, diabetes, cardiovascular disease, and cancer), In addition, each basic plan and goals are shown in it.

Currently, health management aimed at improving productivity has begun to be implemented with the goal to maintain the health of workers in Japan. This is because it is essential to raise the health condition of each employee and improve productivity due to the social background of a declining working population, an aging workforce, and an increase in national medical expenses in Japan. A feeling of dizziness, a headache, or a minor discomfort can significantly affect productivity. Therefore, in this study, we report the results of a self-administered questionnaire survey conducted in 2019 on subjective dizziness, tinnitus, and headache at resident health checkups in Yakumo Town, Hokkaido, Japan, where there is little population movement. From 2027 to 2019, we have continuously conducted taste and smell test results at the time of the Yakumo town resident health checkups. Using these results, we will report a comparison by age group. Although many sensory organs have been reported to deteriorate with age, there have been few reports on the interrelationships among taste, smell, hearing and vision.

In recent years, many reports have revealed that reduced sense of smell and decreased sense of taste occur as precursors of cognitive decline.

In recent years, there have been many reports that cognitive function declines when hearing declines. Therefore, this study also reports on the relationship between taste and smell test results and other test results in residents aged 40 and over in Yakumo Town, Hokkaido, Japan resident health checkups.

II. MATERIAL AND METHOD

A total of 297 participants, 128 male and 169 female aged 40 and over, participated in the health checkup for residents of Yakumo Town, Hokkaido, Japan, in August 2019. The subjects of the self-reported questionnaire survey were subjective dizziness, subjective tinnitus, subjective headache, subjective taste, and subjective sense of smell.

A simple salty taste test kit (salsave: manufactured by Advantech) was used for the taste test. A simple olfactory test kit (smell stick: manufactured by Daiichi Kogyo Co., Ltd.) was used for the olfactory test.

The obtained data were compared using statistical methods. A binomial logistic regression analysis was used. The objective variable was subjective

dizziness, and the explanatory variables were subjective tinnitus, headache, taste, smell, taste test results, and smell test results. The statistical software used was Excel Statistics 2020 (SSRI Co.).

A quick saltiness test recorded perceptible concentrations within six concentrations (0.6%, 0.8%, 1.0%, 1.2%, 1.4%, 1.6%). The salty taste was categorized into three categories: 0.6% to 1.0% salty taste is the normal range, 1.2% to 1.6% requires observation, and 1.6% or more requires consultation.

A simple olfactory test using 12 different odors (Japanese ink, wood, perfume, menthol, mandarin orange, curry, household gas, rose, cypress, stuffy socks, condensed milk, and fried garlic) and recorded the number of smells. Of the 12 types of odors, if six or more classes were recognized, they were classified as normal range; if 5 to 3 classes observation was required; and if two classes or less, consultation was required.

III. RESULTS

As shown in Table 1, the participants were 33 in their 40s, 63 in their 50s, 116 in their 60s, 76 in their 70s, and eight in their 80s.

Table 1 Age distribution of participants (n=297)

	40s	50s	60s	70s	80s
Male (n=128)	10	24	49	39	6
Female (n=169)	23	39	67	37	3
Total (n=297)	33	63	116	76	9

Table 2 shows subjective dizziness by age group. Among participants in their 50s, 50s, and 60s, more male participants than female participants answered that they did not feel subjective dizziness. In addition, it was found that many females in their 50s has a personal feeling of dizziness.

Table 2 Subjective dizziness in each age group number (%)

Male	Male (n=128)			
	None	Somtimes	Common	No answer
40s (n=10)	9 (90.0%)	1 (10.0%)	0 (0.0%)	0 (0.0%)
50s (n=24)	19 (79.2%)	4 (16.7%)	1 (4.2%)	0 (0.0%)
60s (n=49)	40 (81.6%)	8 (16.3%)	0 (0.0%)	1 (2.0%)
70s (n=39)	31 (79.5%)	7 (17.9%)	1 (2.6%)	0 (0.0%)
80s (n=6)	4 (66.7%)	2 (33.3%)	0 (0.0%)	0 (0.0%)
Total 128	103 (80.5%)	22 (17.2%)	2 (1.6%)	1 (0.8%)
Female	Female (n=169)			
	None	Somtimes	Common	No answer
40s (n=23)	16 (69.6%)	5 (21.7%)	1 (4.3%)	1 (4.3%)
50s (n=39)	24 (61.5%)	14 (35.9%)	1 (2.6%)	0 (0.0%)
60s (n=67)	50 (74.6%)	13 (19.4%)	3 (4.5%)	1 (1.5%)
70s (n=37)	33 (89.2%)	4 (10.8%)	0 (0.0%)	0 (0.0%)
80s (n=3)	3 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total 169	126 (74.6%)	36 (21.3%)	5 (3.0%)	2 (1.2%)

Table 3 shows subjective tinnitus for each age group. The proportion of males and females in their 40s, 50s, and 60s who did not experience subjective tinnitus was about the same (60-66%).

Table3 Subjective tinnitus in each age group number (%)

Male	Male (n=128)			
	None	Occasionally	Always	No answer
40s (n=10)	6 (60.0%)	3 (30.0%)	1 (10.0%)	0 (0.0%)
50s (n=24)	16 (66.7%)	7 (29.2%)	1 (4.2%)	0 (0.0%)
60s (n=49)	30 (61.2%)	14 (28.6%)	5 (10.2%)	0 (0.0%)
70s (n=39)	25 (64.1%)	8 (20.5%)	6 (15.4%)	0 (0.0%)
80s (n=6)	4 (66.7%)	1 (16.7%)	1 (16.7%)	0 (0.0%)
Total 128	81 (63.3%)	33 (25.8%)	14 (10.9%)	0 (0.0%)
Female	Female (n=169)			
	None	Occasionally	Always	No answer
40s (n=23)	14 (60.9%)	9 (39.1%)	0 (0.0%)	0 (0.0%)
50s (n=39)	25 (64.1%)	14 (35.9%)	0 (0.0%)	0 (0.0%)
60s (n=67)	44 (65.7%)	17 (25.4%)	6 (9.0%)	0 (0.0%)
70s (n=37)	27 (73.0%)	7 (18.9%)	3 (8.1%)	0 (0.0%)
80s (n=3)	1 (33.3%)	1 (33.3%)	1 (33.3%)	0 (0.0%)
Total 169	111 (65.7%)	48 (28.4%)	10 (5.9%)	0 (0.0%)

Table 4 shows the results of the dizziness questionnaire. It is found that female participants were feeling headaches more than males in each age group.

Table 4 Subjective headache in each age group number (%)

Male	Male (n=128)			
	None	Occasionally	Sometimes	Always
40s (n=10)	10 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
50s (n=24)	24 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
60s (n=49)	49 (100.0 %)	0 (0.0%)	0 (0.0%)	0 (0.0%)
70s (n=39)	38 (97.4%)	1 (2.6%)	0 (0.0%)	0 (0.0%)
80s (n=6)	6 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total 128	127 (99.2%)	1 (0.8%)	0 (0.0%)	0 (0.0%)
Female	Female (n=169)			
	None	Occasionally	Sometimes	Always
40s (n=23)	14 (60.9%)	9 (39.1 %)	0 (0.0%)	0 (0.0%)
50s (n=39)	34 (87.2%)	5 (12.8%)	0 (0.0%)	0 (0.0%)
60s (n=67)	60 (89.6%)	7 (10.4%)	0 (0.0%)	0 (0.0%)
70s (n=37)	35 (94.6%)	2 (5.4 %)	0 (0.0%)	0 (0.0%)
80s (n=3)	3 (100.0%)	0(0.0 %)	0 (0.0%)	0 (0.0%)
Total 169	146 (86.4%)	23 (13.6%)	0 (0.0%)	0 (0.0%)

Table 5 shows a subjective sense of smell. Both males and females showed a marked decline in olfaction with age. In particular, males in their 60s and 70s felt that their subjective sense of smell was inferior to that of females.

Table 5 Subjective sense of smell in each age group number (%)

Male	Male (n=128)			
	None	Hard to understand	Somewhat confusing	understand
40s (n=10)	0 (0.0 %)	0 (0.0 %)	1 (10.0%)	9 (90.0%)
50s (n=24)	0(0.0 %)	0 (0.0 %)	5 (10.8 %)	19 (79.2%)
60s (n=49)	4 (8.2 %)	2 (4.1%)	10 (20.4 %)	33 (67.3%)
70s (n=39)	2 (5.1%)	2 (5.1%)	12 (30.8 %)	23 (59.0%)
80s (n=6)	0 (0.0%)	1 (16.7 %)	2 (33.3%)	3 (50.0%)
Total 128	6 (4.7%)	5 (3.9%)	30 (23.4%)	87 (68.0%)
Female	Female (n=169)			
	None	Hard to understand	Somewhat confusing	understand
40s (n=23)	0 (0.0 %)	1 (4.3 %)	3 (13.0%)	19 (82.6 %)
50s (n=39)	0 (0.0 %)	1 (2.6 %)	5 (12.8 %)	33 (84.6%)
60s (n=67)	2 (3.0%)	1 (1.5 %)	12 (19.9%)	52 (77.6%)
70s (n=37)	1 (2.7 %)	0 (0.0%)	7 (18.9 %)	29 (78.4%)
80s (n=3)	0 (0.0%)	0 (0.0%)	2 (66,7 %)	1 (33.3%)
Total 169	3 (1.8%)	3 (1.8%)	29 (17.2%)	134 (79.3%)

Table 6 shows the subjective sense of taste for each age group. Compared to males, females answered that they could appreciate the taste of each age group. However, the effect of aging was small in both males and females.

Table 6 Subjective sense of taste in each age group number (%)

Male	Male (n=128)			
	None	Hard to understand	Somewhat confusing	understand
40s (n=10)	0 (0.0%)	0 (0.0%)	1 (10.0%)	9 (90.0%)
50s (n=24)	0 (0.0%)	0 (0.0%)	5 (10.8%)	19 (79.2%)
60s (n=49)	1 (2.0 %)	3 (6.1%)	3 (6.1%)	41 (83.7%)
70s (n=39)	0 (0.0%)	1 (2.5 %)	9 (23.1%)	29 (74.4%)
80s (n=6)	0 (0.0 %)	0 (0.0 %)	3 (%50.0)	3 (50.0%)
Total 128	1 (0.8%)	4 (3.1%)	21 (16.4%)	101 (78.9%)
Female	Female (n=169)			
	None	Hard to understand	Somewhat confusing	understand
40s (n=23)	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (100.0%)
50s (n=39)	0 (0.0%)	0 (0.0%)	0 (0.0%)	39 (100.0%)
60s (n=67)	2 (3.0%)	0 (0.0%)	5 (7.5 %)	60 (89.6%)
70s (n=37)	0 (0.0%)	0 (0.0%)	4 (10.8%)	33 (89.2%)
80s (n=3)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	3 (100.0%)
Total 169	2 (1.2%)	0 (0.0%)	9 (5.3%)	157 (92.9%)

Table 7 shows the results of the 12 odor tests on the odor sticks. It has been found that the sense of smell declines with aging. It was found that there was more males in their 50s to 80s who had less recognition of odor than females.

Table 7 Olfactory test results in each age group number (%)

Male	Male (n=128)			
	Normal range	Observation required	Consultation required	No answer
40s (n=10)	10 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
50s (n=24)	20 (83.3 %)	3 (12.5 %)	0 (0.0 %)	0 (0.0 %)
60s (n=49)	32 (65.3%)	13 (26.5%)	4 (8.2 %)	0 (0.0 %)
70s (n=39)	21 (53.8%)	11 (28.2 %)	7 (17.9%)	0 (0.0 %)
80s (n=6)	3 (50.0%)	2 (33.3%)	1 (16.6%)	0 (0.0%)
Total 128	86 (67.2%)	29 (22.6%)	12 (0.9%)	0 (0.0%)
Female	Female (n=169)			
	Normal range	Observation required	Consultation required	No answer
40s (n=23)	22 (95.6 %)	1 (4.3%)	0 (0.0%)	0 (0.0%)
50s (n=39)	37 (94.9%)	2 (5.1%)	0 (0.0 %)	0 (0.0 %)
60s (n=67)	62 (92.5%)	4 (10.3%)	1 (1.5%)	0 (0.0 %)
70s (n=37)	28 (75.7%)	28 (75.7%)	1 (2.7%)	0 (0.0 %)
80s (n=3)	2 (66.7%)	1 (33.3 %)	0 (0.0%)	0 (0.0%)
Total 169	151 (89.3%)	36 (21.3%)	2 (1.2%)	0 (0.0%)

Table 8 shows the salty taste test results by age group. There was no difference in the results of the salty taste test between males and females. However, there were more males than females who required consultation.

Table 8 Taste test results in each age group number (%)

Male	Male (n=128)			
	Normal range	Observation required	Consultation required	No answer
40s (n=10)	9 (90.0 %)	1 (10.0 %)	0 (0.0%)	0 (0.0%)
50s (n=24)	18 (75.0 %)	3 (12.5 %)	3 (12.5%)	0 (0.0 %)
60s (n=49)	48 (97.9 %)	1 (2.4%)	5 (10.2%)	0 (0.0 %)
70s (n=39)	30 (76.9 %)	2 (5.1%)	7 (17.9%)	0 (0.0 %)
80s (n=6)	6 (100.0%)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Total 128	106 (82.8%)	7 (5.5%)	15 (11.7%)	0 (0.0%)

Female	Female (n=169)			
	Normal range	Observation required	Consultation required	No answer
40s (n=23)	19 (82.6 %)	3 (13.0%)	1 (4.3 %)	0 (0.0%)
50s (n=39)	32 (82.1 %)	5 (12.8%)	2 (5.1%)	0 (0.0 %)
60s (n=67)	56 (83.6%)	8 (11.9%)	3 (4.5%)	0 (0.0 %)
70s (n=37)	31 (83.8%)	3 (8.1%)	3 (8.1%)	0 (0.0 %)
80s (n=3)	2 (66.7%)	0 (0.0 %)	1 (33.1 %)	0 (0.0 %)
Total 169	140 (82.8%)	19 (11.2%)	10 (5.9%)	0 (0.0%)

Table 9 shows the olfactory test results. The number of recognizable odors among 12 types of odors was recorded. It was shown that the number of perceived odors decreased as the age of the participants increased.

Table 9 Actual measurement results of the number of cognitions of twelve types of olfactory tests

Male	Male (n=128)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
40s (n=10)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (10.0 %)	2 (20.0 %)	1 (10.0 %)	2 (20.0 %)	1 (10.0 %)	2 (20.0 %)	1 (10.0 %)
50s (n=24)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (4.2 %)	1 (4.2 %)	2 (8.3 %)	2 (8.3 %)	0 (0.0 %)	4 (16.7 %)	7 (29.2 %)	6 (25.0 %)	1 (4.2 %)	0 (0.0 %)
60s (n=49)	4 (8.2 %)	0 (0.0 %)	0 (0.0 %)	2 (4.1 %)	4 (8.2 %)	7 (14.3 %)	4 (8.2 %)	9 (18.4 %)	7 (4.2 %)	2 (4.2 %)	6 (12.2 %)	3 (6.2 %)	1 (2.0 %)
70s (n=39)	3 (7.7 %)	1 (5.1 %)	1 (2.6 %)	3 (7.7 %)	4 (10.3 %)	5 (12.8 %)	4 (10.3 %)	0 (0.0 %)	5 (12.8 %)	5 (12.8 %)	2 (5.1 %)	3 (7.7 %)	2 (5.1 %)
80s (n=6)	0 (0.0 %)	1 (16.7 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	2 (33.3 %)	1 (16.7 %)	0 (0.0 %)	1 (16.7 %)	1 (16.7 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Total 128	7 (5.5%)	3 (2.3%)	1 (0.8%)	6 (4.7%)	9 (7.0%)	16 (12.5%)	12 (9.4%)	11 (8.6%)	18 (14.1%)	17 (13.3%)	15 (11.7%)	9 (7.0%)	4 (3.1%)

Female	Female (n=169)												
	0	1	2	3	4	5	6	7	8	9	10	11	12
40s (n=23)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (4.3 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	7 (30.4 %)	4 (17.4 %)	5 (21.7 %)	2 (17.4 %)	2 (8.7 %)
50s (n=39)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	2 (5.1 %)	1 (2.6 %)	1 (2.6 %)	6 (15.4 %)	7 (17.9 %)	7 (17.9 %)	11 (47.8 %)	4 (17.4 %)
60s (n=67)	0 (0.0 %)	0 (0.0 %)	1 (1.5 %)	0 (0.0 %)	4 (6.0 %)	0 (0.0 %)	6 (9.0 %)	5 (7.5 %)	10 (14.8 %)	8 (11.9 %)	9 (13.4 %)	18 (26.9 %)	6 (9.0 %)
70s (n=37)	0 (0.0 %)	0 (0.0 %)	1 (2.7 %)	1 (2.7 %)	1 (2.7 %)	6 (16.2 %)	4 (10.8 %)	2 (5.4 %)	8 (21.6 %)	7 (18.9 %)	6 (16.2 %)	1 (2.7 %)	0 (0.0 %)
80s (n=3)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (33.3 %)	0 (0.0 %)	0 (0.0 %)	1 (33.3 %)	1 (33.3 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Total 169	0 (0.0 %)	0 (0.0 %)	2 (1.2%)	2 (1.2%)	6 (3.6%)	8 (4.7%)	11 (6.5%)	9 (5.3%)	32 (18.9%)	26 (15.4%)	27 (16.0%)	34 (20.1%)	12 (7.1%)

Table 10 shows the salty taste test results. There was no age-related difference in saltiness perceived by the participants in both males and females.

Table 10 Cognitive resultsof salt concentretion in a salty taste test (number : %)

Male	Male (n=128)						
	0.60%	0.80%	1.00%	1.20%	1.40%	1.60%	1.60% more
40s (n=10)	3 (30.0%)	4 (40.0%)	0 (0.0%)	2 (20.0%)	0 (0.0%)	1 (10.0%)	0 (0.0%)
50s (n=24)	11 (45.6%)	2 (8.2%)	3 (12.5%)	2 (8.2%)	0 (0.0%)	3 (12.5%)	3 (12.5%)
60s (n=49)	23 (46.9%)	8 (16.3%)	8 (16.3%)	4 (8.2%)	1 (2.0%)	5 (10.2%)	0 (0.0%)
70s (n=39)	18 (46.2%)	9 (23.1%)	4 (10.3%)	0 (0.0%)	1 (2.6%)	1 (2.6%)	6 (15.4%)
80s (n=6)	1 (16.7%)	2 (33.3%)	2 (33.3%)	1 (16.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total 128	56 (43.8%)	25 (19.5%)	17 (13.3%)	9 (7.0%)	2 (1.6%)	10 (7.8%)	9 (7.0%)
Female	Female (n=169)						
	0.60%	0.80%	1.00%	1.20%	1.40%	1.60%	1.60% more
40s (n=23)	12 (52.2%)	2 (8.7%)	4 (17.4%)	1 (4.3%)	2 (8.7%)	1 (4.3%)	1 (4.3%)
50s (n=39)	19 (48.7%)	11 (28.2%)	2 (5.1%)	0 (0.0%)	5 (12.8%)	0 (0.0%)	2 (5.1%)
60s (n=67)	32 (47.8%)	17 (25.4%)	5 (7.5%)	2 (3.0%)	4 (6.0%)	3 (4.5%)	4 (6.0%)
70s (n=37)	16 (43.8%)	9 (24.3%)	4 (10.8%)	1 (2.7%)	2 (5.2%)	2 (5.4%)	3 (8.1)
80s (n=3)	1 (33.3%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (33.3%)
Total 169	80 (47.3%)	40 (23.7%)	15 (8.9%)	4 (2.4%)	13 (7.7%)	5 (3.6%)	11 (6.5%)

A binomial logistic regression analysis was used. The objective variable was subjective dizziness, and the explanatory variables were subjective tinnitus, headache, taste, smell, taste test results, and smell test results.

As for items related to dizziness, the results of obesity, urinalysis, fundus examination, lipid examination, and inflammation examination were shown.

It was shown that subjective dizziness is related to the obesity, dermatitis, swollen eyes, and coughing.

Table 11 shows the relationship with diseases that can be understood from the questionnaire results.

Table 11 Results of binomial logistic analysis of subjective dizziness and other test results (Variables included in the regression equation (partial regression coefficient · confidence interval))

Variable	ence intervals for partial regression confidence interval for the oddsce test for partial regression cc											
	gression coe	andard er	artial regression	lower limi	Upper limi	Odds rati	lower limi	Upper limi	Wald	ree of free	P value	: *P<0.05, **P0.01
Gender	0.2358	0.4563	0.1168	-0.5686	1.1301	1.2569	0.5176	3.096	0.267	1	0.6054	
Age	-0.0281	0.0223	-0.2786	-0.0718	0.0156	0.9723	0.9307	1.0157	1.5923	1	0.207	
Urology comperhensive judgment	0.1206	0.3392	0.0872	-0.5441	97.854	1.1282	0.5803	2.1933	0.1265	1	0.7221	
Summary Obesity	0.9144	0.4202	0.5145	0.0908	1.738	2.9453	1.095	5.6859	4.7351	1	0.0296	*
Summary Urinalysis	-1.3025	0.4709	-0.8078	-2.2254	-0.3796	0.2719	0.108	0.6842	7.651	1	0.0057	**
Summary blood pressure	0.0665	0.1689	0.0862	-0.2645	0.3975	1.0687	0.7676	1.4881	0.1549	1	0.6939	
Summary electrocardiogram	-0.6185	0.3584	-0.4027	-1.3209	0.0838	0.5387	0.2669	1.0874	2.9793	1	0.0843	
Summary fundus examination	-0.8972	0.3451	-0.7467	-1.5736	-0.2208	0.4077	0.2073	0.8019	6.7586	1	0.0093	**
Sunnary anemia test	-0.9506	0.4669	-0.4718	-1.7658	0.0646	0.4272	0.1711	1.0667	3.3183	1	0.0685	
Summary diabetes test	-0.1668	0.3191	-0.15	-0.7922	0.4585	0.8464	0.4529	1.5818	0.2733	1	0.6011	
Summary liver function tests	-0.0623	0.3552	-0.0372	-0.7586	0.634	0.9396	0.4683	1.8851	0.0307	1	0.8608	
Summary renal function test	0.3575	0.4253	0.1896	-0.4761	1.1911	1.4298	0.6212	3.2907	0.7065	1	0.4006	
Summary lipid test	0.7125	0.174	0.9736	0.3714	1.0535	2.039	1.4497	2.8678	16.7599	1	0.0001	**
Summary gout test	0.8081	0.4639	0.3312	-0.1011	1.7174	2.2437	0.9038	5.57	3.0347	1	0.0815	
Summary inflammation test	6.1317	1.0427	1.8617	4.088	8.1755	460.235	59.6203	3552.754	34.5789	1	0.0001	**

In addition, Table 12 shows the results of the comparison with the questionnaire results in the field of otolaryngology. A subjective feeling of dizziness was shown to be associated with tinnitus, headache, and

measured olfactory test results. There was a statistically significant difference between subjective dizziness and odor test results.

Table 12 Results of binomial logistic analysis of subjective dizziness and otorhinolaryngology test results (Variables included in the regression equation (partial regression coefficient · confidence interval))

Variable	ence intervals for partial regression confidence interval for the oddsce test for partial regression co											
	gression coe	andard er	artial regression	lower limi	Upper limi	Odds rati	lower limi	Upper limi	Wald	ree of free	P value	: *P<0.05, **P0.01
Gender	0.026	0.343	0.0128	-0.6463	0.6983	1.0263	0.524	2.0102	0.0057	1	0.9397	
Age	-0.0085	0.0164	-0.0844	-0.0407	0.0237	0.9915	0.9601	1.024	0.268	1	0.6047	
Subjective tinnitus	0.7556	0.2339	0.4846	0.2972	1.214	2.1289	1.346	3.367	10.436	1	0.0012	**
Subjective headache	1.304	0.5007	0.3518	0.3227	2.2854	3.6842	1.3809	9.8294	6.7835	1	0.0092	**
Subjective sense of smell	-0.421	0.253	-0.28	-0.9169	0.0749	0.6564	0.3997	1.0777	2.7691	1	0.0961	
Subjective sense of taste	-0.443	0.3099	-0.2106	-1.0517	0.1631	0.6413	0.3494	1.1771	2.0558	1	0.1516	
Taste 3-level evaluation	-0.3615	0.3445	-0.3114	-1.0367	0.3137	0.6967	0.3546	1.3685	1.1009	1	0.2941	
Smell 3-level evaluation	0.1258	0.387	0.0864	-0.6327	0.8844	1.1341	0.5311	2.4214	0.1057	1	0.7451	
Olfactory measurement value	0.1921	0.0976	0.5367	0.0009	0.3833	1.2118	1.009	1.4672	3.8778	1	0.0489	*
Salt taste measurement value	0.7597	0.7422	0.2932	0.6951	2.2144	2.1376	0.499	9.1561	1.0475	1	0.3061	

IV. DISCUSSION

From the results of this study, the degree of obesity, urine test results, fundus test results, lipid test results, and inflammation test results were shown as items related to subjective dizziness. In particular, it was revealed that the relationship with inflammatory reaction is substantial. In otolaryngology, there was a relationship between tinnitus, headache, olfactory perception tests results, and subjective dizziness.

Since participants with a higher olfactory recognition rate feel subjective dizziness, it may be that the dizziness is caused by being sensitive to odors. No relationship was found with the results of the questionnaire on food intake. This finding follows the previous report on questionnaire responses (the subjective evaluation of sensory functions) which differed from the sensory test result (1-6). In the future, it will be necessary to investigate in detail the relationship between subjective dizziness and olfactory test results. Moreover, we need to investigate in detail the relationship between subjective dizziness and inflammation test results.

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Questionnaire Survey Results on Lifestyle Habits (Drinking, Smoking, Suppliment Intake, Exercise Habits, Sleep Time) of 20 Elderly People

By Naomi Katayama

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Abstract- Du to COVID-19, which started in 2020, Japanese people have continued to live in self-restraint until today. As a result, lifestyle habits have drastically changed. There are concerns about living indoors rather than going out, lack of exercise, increased alcohol consumption, irregular eating habits, and lack of sleep or excess sleep. In June 2022, we were finally able to hold a small number of health classes, and we conducted a questionnaire survey on the current living situation so that we will report the results. Participants were 20 elderly females who had been informed about the study and agreed to a consent form. Participants measured their height, weight, blood pressure, and completed a self-reported questionnaire. The content of the self-reported questionnaire survey was the smoking habit, drinking habit, exercise habit, sleeping time, and supplement intake. Participants were also asked about co-habitation.

Keywords: questionnaire survey, drinking, smoking, exercise habits, sleep time.

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Abstract- Du to COVID-19, which started in 2020, Japanese people have continued to live in self-restraint until today. As a result, lifestyle habits have drastically changed. There are concerns about living indoors rather than going out, lack of exercise, increased alcohol consumption, irregular eating habits, and lack of sleep or excess sleep. In June 2022, we were finally able to hold a small number of health classes, and we conducted a questionnaire survey on the current living situation so that we will report the results. Participants were 20 elderly females who had been informed about the study and agreed to a consent form. Participants measured their height, weight, blood pressure, and completed a self-reported questionnaire. The content of the self-reported questionnaire survey was the smoking habit, drinking habit, exercise habit, sleeping time, and supplement intake. Participants were also asked about co-habitation. Most of the participants (60%) lived as married couples. Of the participants, 60 % were alcohol drinkers, mainly beer and wine. Sixty percent of the participants answered that they do not smoke. Among the participants, 40% used supplements, mainly used calcium (Osteoporosis prevention), Iron (anemia prevention), chlorella (nutrition supply), and green juice (vegetable shortage prevention). Most participants slept for 6 hours (30%) and 45% participants slept for 7 hours or more (45%). Of the participant, 20% had no exercise habits, and 35% took walks. As a result, many participants stayed at home for a long time due to self-restraint and did not exercise outdoors. Some participant stayed at home without even taking a walk. We would like to encourage more participants to leave their homes, walk, meet people, and help maintain a regular life.

Keywords: questionnaire survey, drinking, smoking, exercise habits, sleep time.

I. INTRODUCTION

Due to the COVID-19 epidemic, which has continued for three years since 2022, Japanese people are live self-restraint at home. Due to COVID-19, by staying at home, this influences the diet, exercise habits, sleep times, etc., in Japanese life. Therefore, in this study, we conducted a questionnaire

survey on the lifestyle habits of 20 elderly females in a small-group health class for the first time in three years.

II. MATERIAL AND METHODE

Participants signed and sealed a research consent form after receiving an explanation of the research. Participants sanitized their hands with alcohol, wore masks, and measured their body temperature in a ventilated room. In addition, the participants answered a self-reported questionnaire while sitting in seats separated by acrylic panels with a seating distance of 1 m or more. The items of the questionnaire survey for the participants were whether or not they lived together, whether or not they had support or nursing care, whether or not they quit smoking, whether they used alcohol, whether they took supplements, their exercise habits, and their sleep times. Participants also had their height, weight, and blood pressure measured.

This research has been approved after an ethical review at Nagoya Women's University (Hitowomochiitakennkyunikansuruiinkai No. 2020-9)

There are no companies, etc., with COI relationships in this research.

III. RESULTS

Table 1 shows the ling conditions of the participants (the number of co-habitants and the presence or absence of support or nursing care), and Table 2 shows the participant's height, weight, and blood pressure. Most of the participants (60%) lived as married couples. Twenty percent of the participants lived alone. There were 20 female participants with an average age \pm Standard deviation of 78.5 ± 18.6 years. Participant's mean blood pressure was within the normal range.

Table 1. Living situation survey results (20 elderly females)

Number of people living together	Alone	2 people	3 people	4 people	5 people	6 people
Status of support and nursing care	none	support 1	support 2	nursing care 1	nursing care 2	nursiing care 3 or higher
	19	1	0	0	0	0

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Table 2. Body and blood pressure information of health class participants (20 elderly females)

	Age	Hight	Weight	Systolic blood pressure	Diastolic blood pressure
Average value	78.5	152.3	60	118.6	78.4
Standard diviation	18.6	25.6	19.4	19.7	7.3

Sixty percent of the participants answered that they do not smoke. Thirty-five percent of participants said they had quit smoking. Thirty-five percent of participants responded that they do not drink (Table 3). Of the participants, 60 % were alcohol drinkers, mainly drinking beer and wine (Table 4.)

Table 3 Smoking and drinking status of health class participants (20 dlderly females)

Smoking	No smoking	Stop to smoking	Smoking	No answer
	12	7	0	1
Drinking	No drinking	Stop to drinking	Drinking	No answer
	7	1	12	0

Table 4 Drinking frequency and content of 12 participants who drink alcohol (20 dlderly females)

Frequency	Every day	5~6/week	3~4/week	1~2/week	1~2/month
	4	3	1	2	2
Content	Japanese Sake	Cocktails	Beer	Wine	other
	1	1	7	3	0

Among the participants, 40% took supplements such as calcium, iron, vitamin B, vitamin C, cod liver oil, chlorella, and green juice (Table 5).

Table 5 Frequency and Type of Supplement of health class participants (20 dlderly females)

Frequency	Do not take	sometimes	every day	no answer
	11	2	6	1
Type	Ca	Fe	Vitamin B	Vitamin C
	1	1	1	1
Type	Chlorella	Cod liver oil	Green juice	Others
	1	1	1	

Of the participants, 20% had no exercise habits, and 35% took walks (Table 6).

Table 6 Exercise habits (20 dlderly females)

Amount of exercise per week	Almost never	1~2 hours	3~4 hours	more than 5 hours	No answer
	4	6	6	3	1
Amount of exercise per one year	Almost never	Sometimes	once a week	2 times a week	No answer
	4	2	8	5	1
Frequency of walks	Almost never	1 time per week	2~3 times per week	every day	No answer
	6	3	3	7	1

Among the participants, 30% had 6 hours of sleep, followed by 20% with 8 hours and 20% with 7 hours (Table 7).

Table 7 Sleep hours, Bedtime, and Wake up time (20 dlderly females)

Sleep	4 hours	5 hours	6 hours	7 hours	8 hours	No answer
hours	2	2	6	4	5	1
Bedtaime	21 o'clock	22 o'clock	23 o'clock	24 o'clock	Irregular	No answer
	2	6	8	2	2	0
Wake up	4 o'clock	5 o'clock	6 o'clock	7 o'clock	Irregular	No answer
taime	1	3	11	2	3	0

IV. DISCUSSION

In this study, the participants lived independently (few people needed care or support), smoked less (only 20%), and drink less. Drinkers were mostly beer, around 350ml.

Among the participants, 40% used supplements, mainly used calcium (Osteoporosis prevention), Iron (anemia prevention), chlorella (nutrition supply), and green juice (vegetable shortage prevention). Most participants slept for 6 hours (30%), and 45% of participants slept for 7 hours or more (45%). Most participants went to bed at 23:00 (40%) and woke up at 6:00 (55%). Many participants had a regular life time in the city. On the other hand, since 10-15% of the participants lead an irregular lifestyle, we believe that it is necessary to encourage early to bed and early rise and light exercise (walking, etc.) that allows exposure to sunlight during the day time. It is conceivable that by confining such participants at home, their internal clocks would go out of whack without being exposed to sunlight, and their life rhythms would become irregular due to the inability to get good quality sleep. In this survey, 20% of participants did not get enough exercise, and 30% did not even walk. In the future, to increase the number of people who exercise regularly, we would like to hold more events such as health classes while checking the situation of COVID-19. Through these results, we would like to encourage more participants to go out of their homes, walk, meet people, and help maintain a regular life.

V. CONCLUSIONS

A self-administered questionnaire survey in a small group of 20 elderly females in a health class revealed their lack of exercise. It is possible that the COVID-19 stay-at-home policy that has continued since 2020 has had a significant impact. In the future, while assessing the situation of COVID-19, we think that it is necessary to hold more events, recruit participants, and make efforts to get people out and restore their exercise

habits. The US Physical Activity Guidelines recommend that all adults do at least 150 minutes of moderate-to-vigorous physical activity per week. It has become clear that inactive people are more likely to become severely ill than active people when contracting the coronavirus¹. Under COVID-19, as a result of measuring the number of steps using a mobile phone step counting application, it is reported that it is 3000 fewer steps per day in 1-2 weeks than before COVID-19². But on the other hand, from the UK around COVID-19, people have met 150 minutes or more of moderate-to-vigorous physical activity³. It appears that the impact of CIVD-19 on exercise habits varies considerably form country to country. This may be differences in lifestyle habits, exercise habits, and national countermeasures in each country. From now on, we think it is necessary to obtain reports from many countries and cities and compare them.

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Line Spread Test Results for Commercially Available the White Rice Porridge

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Abstract- Lifelines are cut off during disasters. As a result, water, gas, and electricity cannot be used, making it impossible to prepare meals. If you always have ready-to-eat porridge, you do not need to cook it, and can eat it whenever you want. The porridge with a lot of water causes aspiration in older people. In welfare facilities and hospitals, a thickener is used to adjust the viscosity of porridge so that the elderly can safely swallow it. In this study, we measured the thickness of commercially available porridge using the line spread test (LST).

First, the viscosity of commercially available white rice porridge was assumed. Next, the white rice porridge was homogenized with a mixer, and the thickness was measured. Two g of each of the four commercially available thickeners was added to white rice porridge, homogenized with a mixer, and the viscosity was measured after stirring for five minutes. Viscosity measurements were taken 30 seconds, 5 minutes, 15 minutes, and 30 minutes after each porridge placed on the measuring plate. When the white rice porridge was homogenized using a mixer, the viscosity became thin, and there was the risk of aspiration.

Keywords: commercial product, white rice porridge, lin spread test (LST), thickener.

GJMR-L Classification: NLMC Code: QU 145



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Line Spread Test Results for Commercially Available the White Rice Porridge

Including the Effect of Four Types of Thickening Agents Added after Blending

Naomi Katayama ^α, Shoko Kondo ^σ & Mayumi Hirabayashi ^ρ

Abstract- Lifelines are cut off during disasters. As a result, water, gas, and electricity cannot be used, making it impossible to prepare meals. If you always have ready-to-eat porridge, you do not need to cook it, and can eat it whenever you want. The porridge with a lot of water causes aspiration in older people. In welfare facilities and hospitals, a thickener is used to adjust the viscosity of porridge so that the elderly can safely swallow it. In this study, we measured the thickness of commercially available porridge using the line spread test (LST).

First, the viscosity of commercially available white rice porridge was assumed. Next, the white rice porridge was homogenized with a mixer, and the thickness was measured. Two g of each of the four commercially available thickeners was added to white rice porridge, homogenized with a mixer, and the viscosity was measured after stirring for five minutes. Viscosity measurements were taken 30 seconds, 5 minutes, 15 minutes, and 30 minutes after each porridge placed on the measuring plate. When the white rice porridge was homogenized using a mixer, the viscosity became thin, and there was the risk of aspiration. Thickness was measured after adding the four thickening agents to the blended white rice porridge, and all porridges with thickener had thick density. In the event of a disaster, it is necessary to keep white rice porridge on hand and prepare thickeners for baby food for infants and meals for the elderly.

Keywords: commercial product, white rice porridge, line spread test (LST), thickener.

I. INTRODUCTION

Many disasters have occurred in recent years. The Japanese government calls on the general public to stockpile food for at least three days.

In addition, in some areas, residents are asked to collect food for a week. In that case, baby food for infants, nursing care food for the elderly, allergy-friendly food, pathological food, and the like are problematic. If lifelines are cut off, and there is no water, gas, electricity, etc., it will be impossible to cook meals. That is where ready-made commercial products come in handy. In particular, white rice porridge, which is allergy-free and contains water, is one of the foods you should always be on hand. We can make baby food by making white rice porridge, a uniform liquid with a mixer. When white rice porridge is processed in a blender, it contains a lot of water, so the viscosity is thin, and there is a risk of aspiration by the elderly. Liquid white rice porridge needs to be thickened with a commercially available thickener so that people with impaired swallowing ability can eat it safely. In this study, we report the results of viscosity measurement by line spread test using commercially available white rice porridge and four types of thickeners.

II. MATERIALS AND METHODS

The nutritional components of the white rice porridge used in this experiment are shown in the Table 1. The white rice porridge used had 33.2kcal and 7.86g of carbohydrates per 100g (displayed on the product packaging).

Table 1. Contents and nutritional value of commercial porridge

Contents	Nutrient contents (Per 100g)				
	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)	Sodium (mg)
White rice porridge	33.2	0.60	0.00	7.68	0.00

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Table 2 shows the content and nutritional value of the four commercially available thickeners used in this

experiment. The main component of all thickeners was dextrin (displayed on the product packaging).

Table 2 Content and nutritional value of four types of thickeners

	Contents	Nutrient contents (Per 2g)					Sodium (mg)
		Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)		
					Sugar (g)	Dietary fiber (g)	
A	Dextrin, Polysaccharide thickener, potassium chloride, sweetener (Sucralose)	5.27	0.00	0.00	0.87	0.47	10.67
B	Dextrin, Xanthan gum, Trisodium chloride, Calcium lactate	4.00	0.00	0.00	1.00	0.70	3.00
C	Dextrin, Water-soluble dietary fiber, Thickener (Xanthan gum)	5.40	0.00	0.00	1.36	0.50	12.33
D	Dextrin, Polysaccharide thickener, Calcium lactate	0.53	0.03	0.00	0.91	0.83	24.00

a) *Sample (food with Thickener added) adjustment*

Samples were adjusted according to previous reports^{1,2,3,4}. Each of the three foods was prepared as follows.

1. The viscosity of the food product was measured without any modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
2. The viscosity of the food product was measured with modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
3. The viscosity was measured on the food product with modification (homogenize with a mixer) after adding 2grams of thickener (A, B, C, and D) to the food (100g) after 30seconds, 5minutes, 15minutes, and 30minutes.

b) *Viscosity measurement method*

Using Line Spread Test Start Kit (LST) manufactured by SARAYA, the viscosity of each food was measured. The measurement procedure is as follows. The line spread test (LST) was performed in a room with room temperature of 24 degrees. Viscosity measurements by line spread test (LST) were performed three times using the same sample. Data was obtained by averaging the viscosity results of three repeated measurements. The measurement method was according to Line Spread Test Start Kit (LST) manufactured by SARAYA.

1. Place the sheet on a level surface. Place a ring with an inner diameter of 30mm in the center of the concentric circles.
2. Add the liquid to be measured to the total thickness of therig (20ml) and let stand for 30 seconds.
3. Lift the ring vertically, and after 30 seconds, measure the spread distance of the solution. Six points on the outermost circumference of the sample spread concentrically were measured, and the average value was calculated as the result of LST values.
4. After still standing for 5 minutes, the spread of the samples is measured again at 6 points, and the average value is recorded as the LST value.

c) *Criteria for viscosity*

There are three levels of classification by LST value⁵. The first stage is mildly thick with a viscosity that falls within the range of 43mm to 36mm (50-150 mPa · s). As for the properties, when the spoon is tilted, it flows down quickly². The second stage is moderately thick with a viscosity that falls within the range of 36mm to 32mm (150-300 mPa · s). As for the properties, when you tilt the spoon, it flows to the surface². The third stage is highly thick with a viscosity that falls within the range of 32mm to 30mm (300-500 mPa · s). Even if the spoon is tilted, the shape is maintained to some extent, and does not flow easily⁵.

d) *Statistical processing*

This study was statistically processed using statistical processing software (Excel 2010: SSRI Co., Ltd). The data to be compared were first tested for normal distribution by F-test. For comparisons between correlated data, the paired Student-t test was used for normally distributed data. Wilcoxon test was used for non-normally distributed data.

extremely thick to moderately thick with time. When the white rice porridge was processed with a mixer to become a uniform liquid, the viscosity became mildly thick. And then, the thickener was added to the liquid white rice porridge, the thickness of liquid white rice porridge remained highly dense.

III. RESULTS

Table 3 shows the line spread test results. The viscosity of white rice porridge decreased from

Table 3. Viscosity measurement results of four types of thickeners for white rice porridge using the line spread test

	After 30 seconds	After 5 minutes	After 15 minutes	After 30 minutes
None mixer processing (NMP)	28.7 ± 2.9	33.7 ± 4.8	33.6 ± 2.7	33.4 ± 3.0
Mixer processing (MP)	44.8 ± 3.8	50.9 ± 8.7	50.2 ± 10.0	50.2 ± 10.1
MP with Thickener A (Toromicria)	25.8 ± 3.8	27.4 ± 3.9	27.8 ± 4.3	28.0 ± 4.5
MP with Thickener B (Tururinko)	24.4 ± 5.0	28.6 ± 11.1	26.4 ± 5.3	26.9 ± 5.7
MP with Thickener C (Toromifaiver)	25.5 ± 3.3	27.6 ± 3.7	28.3 ± 4.1	29.7 ± 4.1
MP with Thickener D (Neohaitoromi-ru)	22.7 ± 5.3	22.8 ± 5.1	23.9 ± 5.5	23.6 ± 5.4

a) *Statistical processing results*

The line spread test results and statistical processing results are shown in Table 4-9. Except for the white rice porridge with Thickener D, the viscosity was statistically significantly weakened from 30 seconds

to 5 minutes. The white rice porridge with Thickener D, the viscosity was statistically significantly weakened from 5 minutes to 15 minutes. However, all the viscosities of the white rice porridge with Thickener fell into the highly thick.

Table 4. Line spread test (LST) measurement results of white rice porridge

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	28.7 ± 2.9	33.7 ± 4.8	33.7 ± 4.8	33.6 ± 2.7	33.6 ± 2.7	33.4 ± 3.0
F test		P=0.020*		P=0.010**		P=0.334
Paired Student t-test						P=0.781
Wilcoxon test		P=0.042*		P=0.327		

Table 5. Line spread test (LST) measurement results of white rice porridge after Mixer processing (MP)

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	44.8 ± 3.8	50.9 ± 8.7	50.9 ± 8.7	50.2 ± 10.0	50.2 ± 10.0	50.2 ± 10.1
F test		P=0.0001**		P=0.200		P=0.475
Paired Student t-test				P=0.409		P=0.579
Wilcoxon test		P=0.001**				

Table 6. Line spread test (LST) measurement results of white rice porridge after Mixer processing (MP) with Thickener A

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	25.8 ± 3.8	27.4 ± 3.5	27.4 ± 3.5	27.8 ± 4.3	27.8 ± 4.3	28.0 ± 4.5
F test		P=0.430		P=0.356		P=0.430
Paired Student t-test		P=0.030*		P=0.444		P=0.547
Wilcoxon test						

Table 7. Line spread test (LST) measurement results of white rice porridge after Mixer processing (MP) with Thickener B

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	24.4 ± 5.0	28.6 ± 11.1	28.6 ± 11.1	26.5 ± 5.3	26.5 ± 5.3	26.9 ± 5.7
F test		P=0.001**		P=0.002**		P=0.408
Paired Student t-test						P=0.001**
Wilcoxon test		P=0.0001**		P=0.059		

Table 8. Line spread test (LST) measurement results of white rice porridge after Mixer processing (MP) with Thickener C

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	25.5 ± 3.3	27.6 ± 3.7	27.6 ± 3.7	28.3 ± 4.3	28.3 ± 4.3	29.7 ± 4.1
F test		P=0.316		P=0.350		P=0.488
Paired Student t-test		P=0.0001**		P=0.059		P=0.034*
Wilcoxon test						

Table 9. Line spread test (LST) measurement results of white rice porridge after Mixer processing (MP) with Thickene D

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard dev	22.7 ± 5.3	22.8 ± 5.1	22.8 ± 5.1	23.9 ± 5.5	23.9 ± 5.5	23.6 ± 5.4
F test	P=0.443		P=0.373		P=0.476	
Paired Student t-test	P=0.507		P=0.007**		P=528	
Wilcoxon test						

IV. DISCUSSIONS

People with impaired swallowing function are at risk of aspiration form ingesting food mixed with small solids. In the case of white rice porridge, there is a possibility of aspiration depending on the physical condition of the person who eats it because there are rice grains left. If the porridge is made into a uniform liquid using a mixer, the porridge has high water content. It thus becomes less dense, further increasing the possibility of aspiration by the person^{6,7}. The safe consumption of liquid porridge requires the addition of thickeners. All four types of thickeners used this time were able to increase the thickness of the porridge that was made into a uniform liquid using a mixer, making into highly thick. The use of thickeners is effective for providing safe meals. To respond to disasters, we think it is realistic to stockpile porridge and Thickener together.

In the future, we would like to conduct similar tests on various types of rice porridge on the market, accumulate the results, and report them.

V. CONCLUSION

An attempt was made to adjust the viscosity for people with impaired swallowing function by using commercially available retort porridge and a commercially available thickening agent, which are also helpful in times of disaster. As a result, when commercially available retort white rice porridge becomes a uniform liquid using a mixer, its viscosity decreases, making it a dangerous ingredient for people with weakened swallowing functions. Therefore, a commercially available thickener was used to adjust the thickness of the liquid porridge. As a result, the liquid porridge became highly dense and stable. We think it is necessary to stockpile thickeners along with rice porridge so that many people can eat it safely even in the event of a disaster.

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Line Spread Test Results for Commercially Available the White Rice Porridge with Sticky Barley

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Abstract- In the event of a disaster, we will have to take stockpiled food. Retort porridge contains water and can be eaten directly from the container. However, there is a risk of aspiration for people with impaired swallowing function. As a result of the line spread test (LST), which was performed after homogenizing white rice porridge with sticky barley using a mixer, it was found that the viscosity was weak, and there was a risk of aspiration for people with weakened swallowing function. The thickness was added to white rice porridge with sticky barley by using four types of commercially available thickening agents that was made into a uniform liquid with a mixer. A line spread test (LST) was performed by adding 2 g of each thickening agent to 100g of liquid porridge. As a result, the viscosity of the liquid porridge was stabilized and thickened, and it became a state that could swallow more safely. In the line spread test, the thickness of the porridge was measured after 30 seconds, 5 minutes, 15 minutes, and 30 minutes.

Keywords: *commercial product, white rice porridge with sticky barley, lin spread test (LST), thickener.*

GJMR-L Classification: *NLMC Code: QU 145*



LINESPREADTESTRESULTSFORCOMMERCIALLYAVAILABLETHEWHITERICEPORRIDGEWITHSTICKYBARLEY

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Line Spread Test Results for Commercially Available the White Rice Porridge with Sticky Barley

Including the Effect of Four Types of Thickening Agents Added after Blending

Shoko Kondo ^α, Mayumi Hirabayashi ^σ & Naomi Katayama ^ρ

Abstract- In the event of a disaster, we will have to take stockpiled food. Retort porridge contains water and can be eaten directly from the container. However, there is a risk of aspiration for people with impaired swallowing function. As a result of the line spread test (LST), which was performed after homogenizing white rice porridge with sticky barley using a mixer, it was found that the viscosity was weak, and there was a risk of aspiration for people with weakened swallowing function. The thickness was added to white rice porridge with sticky barley by using four types of commercially available thickening agents that was made into a uniform liquid with a mixer. A line spread test (LST) was performed by adding 2 g of each thickening agent to 100g of liquid porridge. As a result, the viscosity of the liquid porridge was stabilized and thickened, and it became a state that could swallow more safely. In the line spread test, the thickness of the porridge was measured after 30 seconds, 5 minutes, 15 minutes, and 30 minutes. Thickeners containing dextrin, thickening polysaccharides, and calcium lactate showed the most stable thickening. In the future, we would like to investigate the viscosity of porridge containing more fat than white rice porridge with sticky barley. In addition, we would like to find a thickening agent suitable for liquefied porridge containing more fat.

Keywords: commercial product, white rice porridge with sticky barley, lin spread test (LST), thickener.

I. INTRODUCTION

In a disaster, lifelines may be cut off, leaving water, gas, and electricity unusable. Cooking hot food can be difficult during a disaster. In times of disaster, it is

necessary to provide meals to people of all ages, from infants to the elderly. Therefore, we need to stockpile food that is suitable for more people. To provide all age groups with the variety of rice porridge that has been stockpiled in anticipation of situations without water, electricity, or gas, it is necessary to change the food form. We can make baby food for infants by using the porridge. We can make the white rice porridge into a uniform liquid with a battery-operated or charger-operated mixer. This liquid porridge is also a meal for the elderly with weak teeth. This liquid porridge poses a risk of aspiration in people with impaired swallowing ability. In this study, a commercially available thickening agent was used to add viscosity to the liquid porridge. Then, the viscosity of the thickener-added porridge was measured using the line spread test (LST). It was investigated whether the measured viscosity is a safe viscosity for people with impaired swallowing function.

II. MATERIALS AND METHODS

The nutritional components of the white rice porridge with sticky barley used in this experiment are shown in the Table 1. The white rice porridge with sticky barley used had 36.80 kcal, 0.68g of protein, 0.36g of fat, 7.68g of carbohydrate, and 0.01g of sodium per 100g (displayed on the product packaging).

Table 1. Contents and nutritional value of commercial porridge

Contents	Nutrient contents (Per 100g)				
	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)	Sodium (mg)
White rice porridge with sticky barley	36.80	0.68	0.36	7.68	0.01

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Table 2 shows the content and nutritional value of the four commercially available thickeners used in this

experiment. The main component of all thickeners was dextrin (displayed on the product packaging).

Table 2 Content and nutritional value of four types of thickeners

Contents	Nutrient contents (Per 2g)					
	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)		Sodium (mg)
				Sugar (g)	Dietary fiber (g)	
A Dextrin, Polysaccharide thickener, potassium chloride, sweetener (Sucralose)	5.27	0.00	0.00	0.87	0.47	10.67
B Dextrin, Xanthan gum, Trisodium chloride, Calcium lactate	4.00	0.00	0.00	1.00	0.70	3.00
C Dextrin, Water-soluble dietary fiber, Thickener (Xanthan gum)	5.40	0.00	0.00	1.36	0.50	12.33
D Dextrin, Polysaccharide thickener, Calcium lactate	0.53	0.03	0.00	0.91	0.83	24.00

a) *Sample (food with Thickener added) adjustment*

Samples were adjusted according to previous reports^{1,2,3,4}. Each of the three foods was prepared as follows.

1. The viscosity of the food product was measured without any modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
2. The viscosity of the food product was measured with modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
3. The viscosity was measured on the food product with modification (homogenize with a mixer) after adding 2grams of thickener (A, B, C, and D) to the food (100g) after 30seconds, 5minutes, 15minutes, and 30minutes.

b) *Viscosity measurement method*

Using Line Spread Test Start Kit (LST) manufactured by SARAYA, the viscosity of each food was measured. The measurement procedure is as follows. The line spread test (LST) was performed in a room with room temperature of 24 degrees. Viscosity measurements by line spread test (LST) were performed three times using the same sample. Data was obtained by averaging the viscosity results of three repeated measurements. The measurement method was according to Line Spread Test Start Kit (LST) manufactured by SARAYA.

1. Place the sheet on a level surface. Place a ring with an inner diameter of 30mm in the center of the concentric circles.
2. Add the liquid to be measured to the total thickness of therig (20ml) and let stand for 30 seconds.
3. Lift the ring vertically, and after 30 seconds, measure the spread distance of the solution. Six points on the outermost circumference of the sample spread concentrically were measured, and the average value was calculated as the result of LST values.
4. After still standing for 5 minutes, the spread of the samples is measured again at 6 points, and the average value is recorded as the LST value.

c) *Criteria for viscosity*

There are three levels of classification by LST value⁵. The first stage is mildly thick with a viscosity that falls within the range of 43mm to 36mm (50-150 mPa · s). As for the properties, when the spoon is tilted, it flows down quickly². The second stage is moderately thick with a viscosity that falls within the range of 36mm to 32mm (150-300 mPa · s). As for the properties, when you tilt the spoon, it flows to the surface². The third stage is highly thick with a viscosity that falls within the range of 32mm to 30mm (300-500 mPa · s). Even if the spoon is tilted, the shape is maintained to some extent, and does not flow easily⁵.

d) *Statistical processing*

This study was statistically processed using statistical processing software(Excel 2010: SSRI Co., Ltd). The data to be compared were first tested for normal distribution by F-test. For comparisons between correlated data, the paired Student-t test was used for normally distributed data. Wilcoxon test was used for non-normally distributed data.

decreased from extremely thick to moderately thick with time. When the white rice porridge with sticky barley was processed with a mixer so that it became a uniform liquid, the viscosity became mildly thick. However, when the thickener added to the liquid white rice porridge with sticky barley, the thickness remained highly dense.

III. RESULTS

Table 3 shows the line spread test results. The viscosity of white rice porridge with sticky barley

Table 3. Viscosity measurement results of four types of thickeners for sticky barley porridge using the line spread test

	After 30 seconds	After 5 minutes	After 15 minutes	After 30 minutes
No adjustment	30.7 ± 4.6	33.1 ± 3.9	35.3 ± 4.4	34.2 ± 4.1
Mixer processing (MP)	45.3 ± 2.4	50.5 ± 5.5	51.6 ± 6.5	51.8 ± 6.6
MP with Thickener A (Toromicria)	24.1 ± 3.8	27.5 ± 5.4	27.2 ± 4.7	27.7 ± 5.3
MP with Thickener B (Tururinko)	24.7 ± 4.6	26.0 ± 5.2	26.7 ± 5.4	28.1 ± 5.6
MP with Thickener C (Toromifaiver)	25.3 ± 4.3	27.1 ± 4.1	26.7 ± 3.9	24.2 ± 3.8
MP with Thickener D (Neohaitoromi-ru)	22.1 ± 4.8	24.0 ± 5.8	24.7 ± 6.1	25.1 ± 6.1

a) *Statistical processing results*

The line spread test results and statistical processing results are shown in Table 4-9. Except for the white rice porridge with sticky barley with thickener C, the viscosity was statistically significantly weakened from 30 seconds to 5 minutes. The white rice porridge with sticky barley that has been homogenized in a mixer,

which porridge with thickener B, and which porridge with thickener D, the viscosity was statistically significantly weakened from 30 seconds to 5 minutes, from 5 minutes to 15 minutes, and 15 minutes to 30minutes. However, all the viscosities of the white rice porridge with sticky barley with Thickener were highly thick.

Table 4. Line spread test (LST) measurement results of sticky barley rice porridge

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	30.7 ± 4.6	33.1 ± 3.9	33.1 ± 3.9	35.3 ± 4.4	35.3 ± 4.4	34.2 ± 4.1
F test	P=0.244		P=0.207		P=0.387	
Paired Student t-test	P=0.020*		P=0.067		P=0.190	
Wilcoxon test						

Table 5. Line spread test (LST) measurement results of sticky barley rice porridge after Mixer processing (MP)

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	45.3 ± 2.4	50.5 ± 5.5	50.5 ± 5.5	51.6 ± 6.5	51.6 ± 6.5	51.8 ± 6.6
F test	P=0.001**		P=0.245		P=0.452	
Paired Student t-test	P=0.001**		p=0.001**		p=0.042*	
Wilcoxon test						

Table 6. Line spread test (LST) measurement results of sticky barley rice porridge after Mixer processing (MP) with Thickener A

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	24.1 ± 3.8	27.5 ± 5.4	27.5 ± 5.4	27.2 ± 4.7	27.2 ± 4.7	27.7 ± 5.3
F test	P=0.077		P=0.298		P=0.329	
Paired Student t-test	p=0.001**		p=0.714		p=0.291	
Wilcoxon test						

Table 7. Line spread test (LST) measurement results of sticky barley rice porridge after Mixer processing (MP) with Thickener B

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	24.7 ± 4.6	26.0 ± 5.2	26.0 ± 5.2	26.7 ± 5.4	26.7 ± 5.4	28.1 ± 5.6
F test	P=0.295		P=0.430		P=0.447	
Paired Student t-test	p=0.001**		p=0.0001**		p=0.044*	
Wilcoxon test						

Table 8. Line spread test (LST) measurement results of sticky barley rice porridge after Mixer processing (MP) with Thickener C

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard deviation	25.3 ± 4.3	27.1 ± 4.1	27.1 ± 4.1	26.7 ± 3.9	26.7 ± 3.9	27.2 ± 3.8
F test	P=0.434		P=0.415		P=0.430	
Paired Student t-test	p=0.260		p=0.609		p=0.002**	
Wilcoxon test						

Table 9. Line spread test (LST) measurement results of sticky barley rice porridge after Mixer processing (MP) with Thickener D

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value \pm Standard deviation	22.1 \pm 4.8	24.0 \pm 5.8	24.0 \pm 5.8	24.7 \pm 6.1	24.7 \pm 6.1	25.1 \pm 6.1
F test		P=0.212		P=0.419		P=0.477
Paired Student t-test		p=0.013*		p=0.0001**		p=0.002**
Wilcoxon test						

IV. DISCUSSIONS

The viscosity of white rice porridge with sticky barley which included more fat than white rice porridge was measured viscosity by using line spread test. The white rice porridge with sticky barley that was made into a uniform liquid porridge with a mixer had a weak viscosity and a thin thickness. Therefore, liquid porridge had a risk of aspiration for people with weakened swallowing function^{6,7}. Consequently, it is necessary to add a thickener to the liquid porridge. All of the four types of thickeners used in this study were able to increase the viscosity of the liquid porridge. In particular, thickeners included dextrin, polysaccharide thickener, and calcium lactate exhibited good viscosity stability over time. The thickening effect of the thickening agent varied depending on the type and amount of nutrients contained in the porridge. We would like to conduct further research on suitable thickeners that maintain stable viscosity using porridge with different nutrients.

V. CONCLUSION

The viscosity of white rice porridge containing sticky barley was investigated using the line spread test (LST). The uniform liquid of white rice porridge with sticky barley is made using a mixer, the food has a low viscosity and is highly likely to be aspirated by people with weakened swallowing function. The safety eating of liquid porridge, it is necessary to add a thickening agent to the liquid porridge. A thickener included dextrin, polysaccharide thickener, calcium lactate was suitable for the liquid porridge of white rice with sticky barley.

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Line Spread Test Results for Commercially Available the White Rice Porridge with Salmon

By Shoko Kondo, Mayumi Hirabayashi & Naomi Katayama

Nagoya Women's University

Abstract- Commercially available porridge containing ingredients (meat, fish, vegetables, etc.) has a high nutritional value and is very useful both daily and in the event of a disaster.

By making porridge into a uniform liquid porridge with a mixer, baby food and people with weak chewing ability can eat it. Uniform liquid porridge poses a risk of aspiration for people with impaired swallowing function. In this study, we report the result of making the white rice porridge with salmon into a uniform liquid porridge with a mixer and adding four different types of Thickener to increase the viscosity. By adding salmon as an ingredient, the amount of protein was higher than that of white rice porridge. By adding two types of Thickener containing dextrin and calcium lactate, the viscosity remained stable over time. The type of thickening agent that stabilizes the viscosity varies depending on the nutrients contained in the porridge, we would like to study more combinations of porridge and thickening agents in the future.

Keywords: commercial product, white rice porridge with salmon, lin spread test (LST), thickener.

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Line Spread Test Results for Commercially Available the White Rice Porridge with Salmon

Including the Effect of Four Types of Thickening Agents Added after Blending

Shoko Kondo ^α, Mayumi Hirabayashi ^σ & Naomi Katayama ^ρ

Abstract- Commercially available porridge containing ingredients (meat, fish, vegetables, etc.) has a high nutritional value and is very useful both daily and in the event of a disaster.

By making porridge into a uniform liquid porridge with a mixer, baby food and people with weak chewing ability can eat it. Uniform liquid porridge poses a risk of aspiration for people with impaired swallowing function. In this study, we report the result of making the white rice porridge with salmon into a uniform liquid porridge with a mixer and adding four different types of Thickener to increase the viscosity. By adding salmon as an ingredient, the amount of protein was higher than that of white rice porridge. By adding two types of Thickener containing dextrin and calcium lactate, the viscosity remained stable over time. The type of thickening agent that stabilizes the viscosity varies depending on the nutrients contained in the porridge, we would like to study more combinations of porridge and thickening agents in the future.

Keywords: commercial product, white rice porridge with salmon, lin spread test (LST), thickener.

I. INTRODUCTION

Commercially available retort porridge is beneficial daily and in the event of a disaster. Porridge on the market already contains enough water, making it easy to eat. If the porridge contains ingredients (meat, fish, vegetables, etc.), the nutritional

value will be higher. Daily, we can add side dishes to commercially available rice porridge for a meal, but in times of disaster, it may be challenging to make said plates because lifelines are cut off. At that time, if there is porridge containing ingredients (meat, fish, vegetables, etc.), it will be possible to supplement nutrients as a meal. In the case of porridge with ingredients, it may be necessary to use a mixer to make it into a uniform liquid porridge for baby food or people with impaired swallowing function. Liquid porridge is less viscous and more likely to be aspirated by people with poor swallowing ability. Therefore, it is necessary to add a thickener to the liquid porridge to increase its viscosity. In this study, we investigated the stability of white rice porridge with salmon, which has a higher protein content than white rice porridge after adding a thickener.

II. MATERIALS AND METHODS

The nutritional components of the white rice porridge with salmon used in this experiment are shown in the Table 1. The white rice porridge with salmon used had 37.20 kcal, 1.20g of protein, 7.60g of carbohydrate, and 0.56g of sodium per 100g (displayed on the product packaging).

Table 1. Contents and nutritional value of commercial porridge

Contents		Nutrient contents (Per 100g)				
		Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)	Sodium (mg)
White rice porridge with salmon	Non-glutinous rice, Sockeye salmon flakes, Salt, Kombu stock, Yeast extract powder	37.20	1.20	0.00	7.60	0.56

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Table 2 shows the content and nutritional value of the four commercially available thickeners used in this experiment. The main component of all thickeners was dextrin (displayed on the product packaging).

Table 2 Content and nutritional value of four types of thickeners

	Contents	Nutrient contents (Per 2g)					Sodium (mg)
		Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)		
					Sugar (g)	Dietary fiber (g)	
A	Dextrin, Polysaccharide thickener, potassium chloride, sweetener (Sucralose)	5.27	0.00	0.00	0.87	0.47	10.67
B	Dextrin, Xanthan gum, Trisodium chloride, Calcium lactate	4.00	0.00	0.00	1.00	0.70	3.00
C	Dextrin, Water-soluble dietary fiber, Thickener (Xanthan gum)	5.40	0.00	0.00	1.36	0.50	12.33
D	Dextrin, Polysaccharide thickener, Calcium lactate	0.53	0.03	0.00	0.91	0.83	24.00

a) *Sample (food with Thickener added) adjustment*

Samples were adjusted according to previous reports^{1,2,3,4}. Each of the three foods was prepared as follows.

1. The viscosity of the food product was measured without any modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
2. The viscosity of the food product was measured with modification (homogenize with a mixer) after 30seconds, 5minutes, 15minutes, and 30minutes.
3. The viscosity was measured on the food product with modification (homogenize with a mixer) after adding 2grams of thickener (A, B, C, and D) to the food (100g) after 30seconds, 5minutes, 15minutes, and 30minutes.

b) *Viscosity measurement method*

Using Line Spread Test Start Kit (LST) manufactured by SARAYA, the viscosity of each food was measured. The measurement procedure is as follows. The line spread test (LST) was performed in a room with room temperature of 24 degrees. Viscosity measurements by line spread test (LST) were performed three times using the same sample. Data was obtained by averaging the viscosity results of three repeated measurements. The measurement method was according to Line Spread Test Start Kit (LST) manufactured by SARAYA.

1. Place the sheet on a level surface. Place a ring with an inner diameter of 30mm in the center of the concentric circles.
2. Add the liquid to be measured to the total thickness of therig (20ml) and let stand for 30 seconds.
3. Lift the ring vertically, and after 30 seconds, measure the spread distance of the solution. Six points on the outermost circumference of the sample spread concentrically were measured, and the average value was calculated as the result of LST values.
4. After still standing for 5 minutes, the spread of the samples is measured again at 6 points, and the average value is recorded as the LST value.

c) *Criteria for viscosity*

There are three levels of classification by LST value⁵. The first stage is mildly thick with a viscosity that falls within the range of 43mm to 36mm (50-150 mPa · s). As for the properties, when the spoon is tilted, it flows down quickly². The second stage is moderately thick with a viscosity that falls within the range of 36mm to 32mm (150-300 mPa · s). As for the properties, when you tilt the spoon, it flows to the surface². The third stage is highly thick with a viscosity that falls within the range of 32mm to 30mm (300-500 mPa · s). Even if the spoon is tilted, the shape is maintained to some extent, and does not flow easily⁵.

d) *Statistical processing*

This study was statistically processed using statistical processing software(Excel 2010: SSRI Co., Ltd). The data to be compared were first tested for normal distribution by F-test. For comparisons between correlated data, the paired Student-t test was used for normally distributed data. Wilcoxon test was used for non-normally distributed data.

III. RESULTS

Table 3 shows the line spread test results. The viscosity of white rice porridge with salmon decreased

from moderately thick to mildly thick with time. The white rice porridge with salmon was processed with a mixer to become a uniform liquid, the viscosity became mildly thick. However, when the Thickener B and D added to the liquid white rice porridge with salmon, the viscosity remained highly dense. When the thickener C added to the liquid white rice porridge with salmon, the viscosity decreased from highly dense to moderately dense with time. When the thickener A was added to the liquid white rice porridge with salmon, the viscosity decreased from moderately dense to mildly dense with time.

Table 3. Viscosity measurement results of four types of thickeners for salmon rice porridge using the line spread test

	After 30 seconds	After 5 minutes	After 15 minutes	After 30 minutes
No adjustment	31.9 ± 5.3	34.8 ± 3.7	35.5 ± 4.2	35.5 ± 4.2
Mixer processing (MP)	47.4 ± 3.6	53.1 ± 9.8	53.7 ± 9.6	53.7 ± 9.8
MP with Thickener A (Toromicria)	35.6 ± 1.9	39.2 ± 2.4	40.7 ± 2.6	41.0 ± 2.5
MP with Thickener B (Tururinko)	26.8 ± 3.5	28.6 ± 3.7	28.3 ± 7.2	30.1 ± 3.8
MP with Thickener C (Toromifaiver)	31.9 ± 2.3	35.2 ± 2.7	36.2 ± 4.0	36.4 ± 2.7
MP with Thickener D (Neohaitoromi-ru)	23.6 ± 3.1	24.7 ± 3.0	25.5 ± 3.1	25.6 ± 3.1

a) *Statistical processing results*

The line spread test results and statistical processing results are shown in Table 4-9. For all the samples, the viscosity was statistically significantly weakened from 30 seconds to 5 minutes after putting the white rice porridge with salmon on the viscometer plate under other conditions. The white rice porridge

with salmon with thickeners A, B, C, and D, the viscosity was statistically significantly weakened from 5 minutes to 15 minutes after putting the white rice porridge with salmon on the viscometer plate. The viscosities of the white rice porridge with salmon with thickener B and D were highly dense.

Table 4. Line spread test (LST) measurement results of salmon rice porridge

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ±Standard deviation	31.9±5.3	34.8±3.7	34.8±3.7	35.5±4.2	35.5±4.2	35.5±4.2
F test	P=0.076		P=0.309		P=0.483	
Paired Student t-test	p=0.002**		p=0.264		p=1.000	
Wilcoxon test						

Table 5. Line spread test (LST) measurement results of salmon rice porridge after Mixer processing (MP)

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ±Standard deviation	47.4±3.6	53.1±9.8	53.1±9.8	53.7±9.6	53.7±9.6	53.7±9.8
F test	P=0.0001**		P=0.472		P=0.475	
Paired Student t-test	p=0.004**		p=0.116		p=0.579	
Wilcoxon test						

Table 6. Line spread test (LST) measurement results of salmon rice porridge after Mixer processing (MP) with Thickener A

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ±Standard deviation	35.6±1.9	39.2±2.4	39.2±2.4	40.7±2.6	40.7±2.6	41.0±2.5
F test	P=0.188		P=0.397		P=0.441	
Paired Student t-test	p=0.0001**		p=0.0001**		p=0.0001**	
Wilcoxon test						

Table 7. Line spread test (LST) measurement results of salmon rice porridge after Mixer processing (MP) with Thickener B

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ±Standard deviation	26.8±3.5	28.6±3.7	28.6±3.7	28.3±7.2	28.3±7.2	30.1±3.8
F test	P=0.399		P=0.003		P=0.005**	
Paired Student t-test	p=0.0001**		p=0.023*		p=0.114	
Wilcoxon test						

Table 8. Line spread test (LST) measurement results of salmon rice porridge after Mixer processing (MP) with Thickener C

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ±Standard deviation	31.9±2.3	35.2±2.7	35.2±2.7	36.6±4.0	36.6±4.0	36.4±2.7
F test	P=0.300		P=0.470*		P=0.054	
Paired Student t-test	p=0.0001**		p=0.004**		p=0.738	
Wilcoxon test						

Table 9. Line spread test (LST) measurement results of salmon rice porridge after Mixer processing (MP) with Thickene D

	After 30 seconds	After 5 minutes	After 5 minutes	After 15 minutes	After 15 minutes	After 30 minutes
Average value ± Standard dev	23.6 ± 3.1	24.7 ± 3.0	24.7 ± 3.0	25.5 ± 3.1	25.5 ± 3.1	25.6 ± 3.1
F test	P=0.433		P=0.413		P=0.499	
Paired Student t-test	p=0.007**		p=0.001**		p=0.163	
Wilcoxon test						

IV. DISCUSSIONS

The liquid rice porridge of white rice porridge with salmon, which has a higher protein content than white rice porridge, became thicker with the four different thickeners used in this study. Thickeners containing dextrin, polysaccharide thickener, and lactate were the most dense, followed by Thickeners included dextrin, xanthan gum, trisodium chloride, and calcium lactate. The other two thickeners made the porridge more viscous than the liquid porridge alone, but did not produce a thick consistency. Thickeners containing dextrin and calcium lactate are likely to increase the viscosity of liquid porridge with high protein content. The viscosity of the liquid porridge is thin and thick, making it a good meal for people with weakened masticatory function. Since the viscosity of the liquid porridge is low, there is a risk of aspiration for people with impaired swallowing function^{6,7}. In the future, it is necessary to research the combination of the nutritional value of commercially available porridge and a suitable thickening agent that stabilizes the viscosity when it is made into a liquid porridge.

V. CONCLUSION

White rice porridge with salmon, which has a higher protein content than white rice porridge, was made into a uniform liquid porridge using a mixer, and Thickener added to examine the stability of viscosity. The results showed that thickening agents containing dextrin and calcium lactate increased the viscosity of the liquid porridge. It may be necessary to investigate in more detail the combination of porridge and thickener that have different nutritional values.

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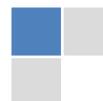
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Career

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Exclusive

Reputation



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- Electronic material
- Any other original work

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Acknowledgments

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Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.



Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



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It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

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The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

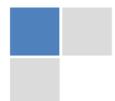
Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

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Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



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Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

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TIPS FOR WRITING A GOOD QUALITY MEDICAL RESEARCH PAPER

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

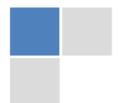
15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.



20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

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23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.



The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

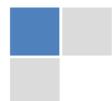
If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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	A-B	C-D	E-F
<i>Abstract</i>	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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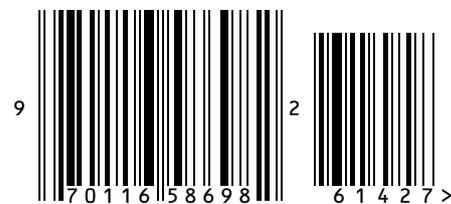
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