

**Development and Validation of the Meiji Nutritional Profiling System (Meiji NPS)
for Evaluating the Nutritional Value of Foods
Published in the International Academic Journal “*Nutrients*”**

Meiji Co., Ltd. (President and Representative Director: Katsunari Matsuda) has developed*¹ and validated the Meiji Nutritional Profiling System (Meiji NPS). The results of this research have been published in the esteemed international academic journal *Nutrients* (*Nutrients*. 2024; 16(7):936. <https://doi.org/10.3390/nu16070936>). Through the Meiji NPS, we strive to provide products with higher nutritional value and contribute to consumers' food choices considering nutritional value.

Title of the Paper

Development and Validation of the Meiji Nutritional Profiling System (Meiji NPS) to Address Dietary Needs of Adults and Older Adults in Japan

Summary of the Paper

1. Nutritional Profiling System (NPS) is widely used across the world. To effectively apply an NPS in Japan, it is essential to develop an NPS tailored to local food habits, nutritional intake, and health issues.
2. Based on the design of an existing NPS called the Nutrient-Rich Food Index 9.3 (NRF 9.3)*², we developed two types of NPS appropriate for Japanese health issues: the Meiji NPS for adults focusing on lifestyle-related diseases and thinness among young women, and the Meiji NPS for older adults focusing on frailty.
3. In the Meiji NPS for adults, we selected energy, saturated fatty acids, sugars, and salt equivalent as the nutrients to limit, and protein, dietary fiber, calcium, iron, and vitamin D as the nutrients to encourage. In the Meiji NPS for older adults, we selected energy, sugars, and salt equivalent as the nutrients to limit, and protein, dietary fiber, calcium, and vitamin D as the nutrients to encourage. We selected fruits, vegetables, nuts, legumes, and dairy as the food groups to encourage in both the Meiji NPS for adults and the Meiji NPS for older adults.
4. We confirmed the validity of the Meiji NPS for adults and the Meiji NPS for older adults by using the correlation coefficients with the existing NPSs, which were NRF 9.3 and the Health Star Rating (HSR)*³. These results show that the Meiji NPS can evaluate the nutritional value of foods as well as NRF9.3 and HSR.

Explanation of the Content in the Paper**● What is an NPS?**

An NPS is a scientific method for classifying or ranking foods based on their nutritional composition. Given the regional variations in dietary patterns, nutritional intake and health issues depending on life stage, it has been suggested it is necessary to develop an NPS suitable for each target.

● Development of the Meiji NPS focusing on regional and life stage differences

In the development of the Meiji NPS, we focused on the health issues in Japan. While the risk of lifestyle-related diseases caused by overnutrition, such as overweight/obesity, is a health issue for adults, it has also been pointed out that thinness among young women is a health issue. In addition, frailty among older adults is a major health issue in Japan because Japan is an aging society.

Therefore, we developed these two types of the Meiji NPS based on the health issues of adults and older adults: the Meiji NPS for adults focusing on lifestyle-related diseases and thinness among young women, and the Meiji NPS for older adults focusing on frailty.

This consideration for regional and life stage differences is the feature of the Meiji NPS.

- **How to calculate the Meiji NPS score**

In the Meiji NPS, the nutritional value of foods is evaluated based on the nutrients to limit, the nutrients to encourage, and the food groups to encourage (Table).

The Meiji NPS gives foods rich in the nutrients to limit lower score, and food rich in the nutrients to encourage, or food groups to encourage higher score.

Table: Nutrients to limit, nutrients to encourage, and food groups to encourage in the Meiji NPS

Items		For Adults	For Older Adults
Nutrients to limit	Energy	✓	✓
	Saturated fatty acids	✓	
	Sugars	✓	✓
	Salt equivalent	✓	✓
Nutrients to encourage	Protein	✓	✓
	Dietary fiber	✓	✓
	Calcium	✓	✓
	Iron	✓	
	Vitamin D	✓	✓
Food groups to encourage	Fruits	✓	✓
	Vegetables	✓	✓
	Nuts	✓	✓
	Legumes	✓	✓
	Dairy	✓	✓

- **Validation of the Meiji NPS**

In this study, we confirmed the validity of the Meiji NPS by using the correlation coefficients with the NRF9.3 ($r = 0.67$ for adults, $r = 0.60$ for older adults) and HSR ($r = 0.64$ for adults, $r = 0.61$ for older adults). These results indicate the validity of the two types of Meiji NPS for adults and older adults.

*1 https://www.meiji.com/global/news/2023/pdf/230630_01.pdf

*2 NRF9.3 was developed by Dr. Adam Drewnowski at the University of Washington.

*3 HSR is being utilized in both Australia and New Zealand.

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