

Aroma Components in Plain Yogurt Activate Cognitive Functions Assessed by Electroencephalography Analysis

Presented at the 77th Annual Meeting of the Japan Society of Nutrition and Food Science, and at the 70th Anniversary Meeting of the Japanese Society for Food Science and Technology

MEGMILK SNOW BRAND Co., Ltd (President Masatoshi Sato; Shinjuku, Tokyo) announces a discovery that the aroma of plain yogurt activated cognitive functions assessed by electroencephalography (hereinafter EEG) analysis. This research was a joint study led by Associate Professor Chizuru Konagai of Jumonji University (Saitama, Japan), and the findings were presented at the 77th Annual Meeting of the Japan Society of Nutrition and Food Science, and at the 70th Anniversary Meeting of the Japanese Society for Food Science and Technology.

We are actively engaged in research and development, with corporate slogan "Make the future with milk", to create new value in milk and to provide customers with delicious taste and health.

It is known that some food flavors enhance subjective vigilance and cognitive activity, in which activation of the brain functions plays a fundamental role.

As for fermented milk including plain yogurt, a large number of aromatic components are produced during fermentation, which are not originally contained in unfermented raw milk. This time, we carried out research on fermented milk, with the aim of discovering new values for milk and dairy products; then we revealed that the aroma of plain yogurt activated cognitive functions. Moreover, our further research identified "diacetyl" as a component contributing to the activation of cognitive functions, which was also confirmed by the enhancement of subjective cognitive activity that was measured using a subjective evaluation method.

We will further continue to deepen our knowledge of milk and create products that contribute to people's health and richness of diets.

【Summary of the presentation】

■ The 77th Annual Meeting of the Japan Society of Nutrition and Food Science

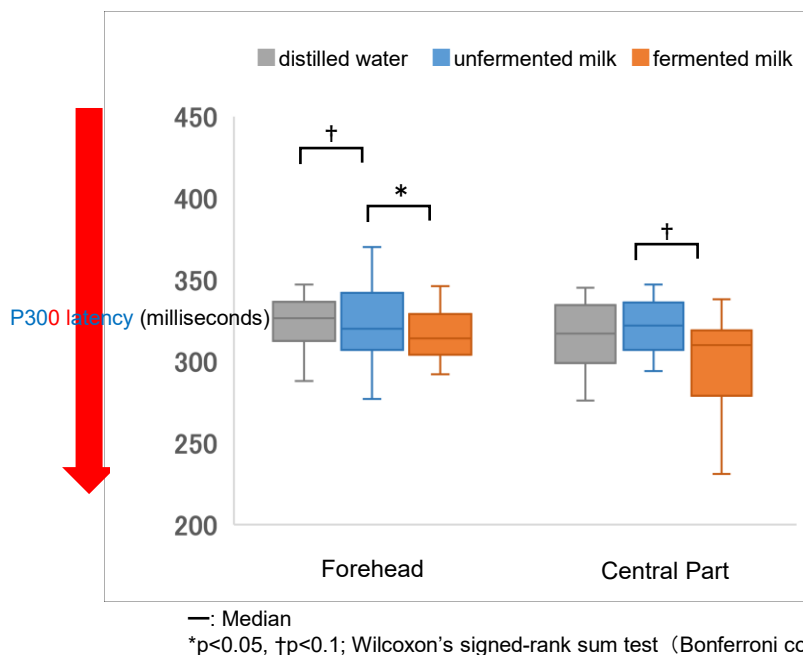
The effects of the aroma of fermented milk (plain yogurt) on the brain functions were clarified by measuring EEG, which reflects cognitive functions. EEG was measured and analyzed when participants sniffed fermented milk, unfermented milk, and distilled water. EEG data suggested that the aroma of fermented milk had a greater effect on activating cognitive functions when compared to that of unfermented milk or distilled water.

■ The 70th Anniversary Meeting of the Japanese Society for Food Science and Technology

Since our previous study found that the aroma of fermented milk activated cognitive functions, we further measured and analyzed EEG when participants sniffed three main aroma components of plain yogurt: acetic acid, butyric acid, and diacetyl. EEG data indicated that the diacetyl aroma activated cognitive functions and enhanced subjective cognitive activity of participants that was measured using a subjective evaluation method.

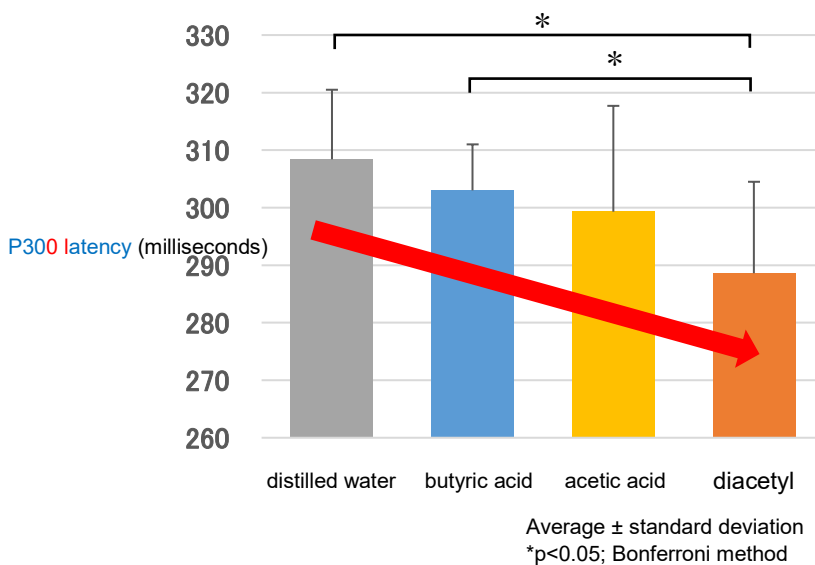
The event-related potential P300 is an electroencephalogram that is recorded approximately 300 milliseconds after a given sensory stimulus.

The P300 latency indicates the time it takes for the P300 waveform to reach its peak; a shorter P300 latency indicates that cognitive functions are being activated.



The P300 latency was shorter in participants who sniffed fermented milk than in those who sniffed unfermented milk, indicating that the aroma of fermented milk activated cognitive functions.

Chart 1. P300 latency in the forehead and the central part of the brain when sniffing fermented and unfermented milk (n=19).



The P300 latency was shorter in participants who sniffed diacetyl than in those who sniffed butyric acid or distilled water, indicating that diacetyl activated cognitive functions.

Chart 2. P300 latency in the central part of the brain when sniffing major flavor components in plain yogurt (n=9).

◆ The 77th Annual Meeting of the Japanese Society of Nutrition and Food Science
Title of the abstract : Effects of yogurt aroma on cognitive function
Presenter: Chizuru Konagai¹⁾*, Yukiko Motsuchi²⁾, Mai Kiyota²⁾, Asako Sakagami²⁾,
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* Presenter

1) Jumonji University

2) Megmilk Snow Brand co., Ltd

Date: Saturday, October 13, 2023

Place: Sapporo Convention Center (Sapporo, Hokkaido, Japan)

◆ The 70th Anniversary Meeting of the Japanese Society for Food Science and Technology
Title of the abstract : Cognitive Activation Effect of Aromatic Components in Plain Yogurt
Presenter: Chizuru Konagai¹⁾*, Yukiko Motsuchi²⁾, Mai Kiyota²⁾, Asako Sakagami²⁾,
Tomoko Ogura²⁾

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2) Megmilk Snow Brand co., Ltd

Date: Friday, August 25, 2023

Place: Kyoto Women's University (Kyoto, Japan)

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