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MORINAGA MILK

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Plain Yogurt Containing *Bifidobacterium longum* BB536, Combined with Lifestyle Improvements, May Slow the Pace of Aging

Published in the Scientific Journal *Aging*

For more than 50 years, Morinaga Milk has conducted a broad range of research—from basic to applied—on the diverse health benefits of Human-Residential Bifidobacteria (HRB),[*1] the bifidobacteria that reside in the human gut. In a new study, we investigated how aging is affected by the consumption of plain yogurt containing *Bifidobacterium longum* BB536 (BB536),[*2] an HRB strain, together with improvements in diet and exercise habits. Over the three-month program, a possible slowing was indicated in a marker that reflects the pace of aging. These research findings were published in the scientific journal *Aging* on May 29, 2026. [*3]

1. Research Background

Aging is recognized as a major risk factor for many chronic diseases, including cardiovascular disease, diabetes, and neurodegenerative disorders. Given this background, research examining aging itself has become increasingly important, and a variety of aging-related markers have been developed. Some of these markers draw on DNA methylation[*4] information from the blood, and among them are indicators thought to represent the pace of aging. Using such indicators, a U.S. study in which participants maintained roughly 25% caloric restriction for two years reported that the pace of aging might slow by about 2–3%.[*5] In the present study, we therefore examined how a three-month program of improvements in diet and exercise habits—including daily consumption of 100 g of plain yogurt containing BB536—affects a marker that reflects the pace of aging.

2. Research Methods

• Participants: 48 overweight men aged 50 to 74 years (BMI of 25 kg/m^2 or higher)
• Study Design: An exploratory, randomized, open-label, parallel-group controlled trial
• Study Groups:
  – Intervention group:
    (1) Daily consumption of 100 g of plain yogurt containing BB536
    (2) Dietary guidance: individualized counseling based on daily food records, advising participants to curb overeating, snacking, and sugar-sweetened beverages
    (3) Exercise guidance: advising participants to keep up walking or stepper exercise for about 30 minutes a day, on at least three days a week
  – Control group: instructed to maintain their usual lifestyle habits.
• Trial (Intervention) Period: three months
• Evaluation Parameters: DNA methylation–based aging-related markers, body weight, and other health measures

3. Research Results

- For DunedinPACE,[*6] an indicator of the current pace of aging, the intervention group showed a significant decrease compared with the control group, suggesting that the intervention may have slowed the pace of aging by about 2.3% (Figure 1).
- In exploratory correlation analyses[*7] of the relationship between changes in the pace of aging and changes in BMI, no clear correlation was found between the two (Figure 2). Likewise, no correlation was found with changes in exercise frequency (Figure 3).

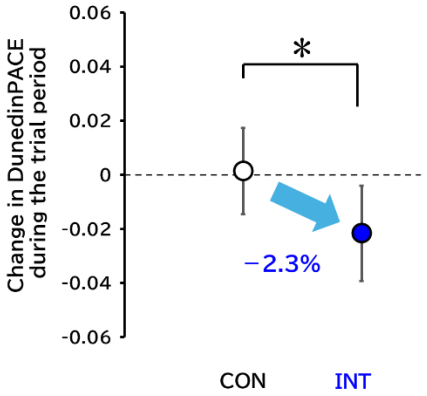

Figure 1. Change in DunedinPACE (an indicator related to the pace of aging) during the trial period
(* $p < 0.05$; significant difference compared with the control group)

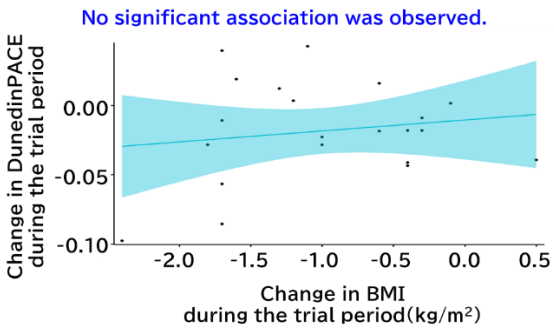

Figure 2. Correlation between changes in DunedinPACE and changes in BMI during the trial period
(Each point represents an individual participant; the solid line depicts a simple linear regression fit, shown for visualization only. Pearson correlation coefficient = 0.16, p = 0.49)

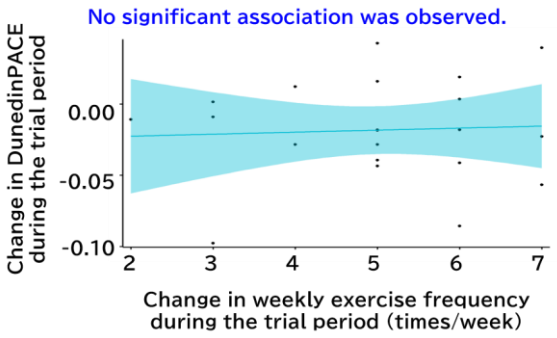

Figure 3. Correlation between changes in DunedinPACE and changes in weekly exercise habits during the trial period
(Each point represents an individual participant; the solid line depicts a simple linear regression fit, shown for visualization only. Pearson correlation coefficient = −0.04, p = 0.81)

4. Summary and Future Outlook

In this study, over a three-month program of improvements in diet and exercise habits—including daily consumption of 100 g of plain yogurt containing BB536—a marker reflecting the pace of aging showed an approximately 2.3% slowing. This magnitude of change is considered comparable to the roughly 2–3% slowing reported in a U.S. study in which participants maintained about 25% caloric restriction for two years. Notably, this result showed no correlation with the before-and-after changes in BMI, which is thought to be readily influenced by dietary guidance, or with the number of exercise sessions. It is possible that the combined, multifaceted effects of consuming plain yogurt containing BB536, together with modifying one's diet and exercise habits, contributed to the slowing of the pace of aging.

Morinaga Milk will continue to advance its research on bifidobacteria. By communicating the distinctive features of bifidobacteria and the supporting scientific evidence in an accessible way, and through product applications and overseas expansion, we aim to contribute to the health of more people.

Reference information

***1 Human-Residential Bifidobacteria; HRB**

To date, more than 100 species of bifidobacteria have been identified. However, the bifidobacteria that inhabit the human gut are fundamentally different from those found in non-human hosts. Morinaga Milk's research and development focuses on bifidobacteria that reside in the human gut. Morinaga Milk has designated the bifidobacterial species that characteristically inhabit the human intestinal tract as "Human-Residential Bifidobacteria (HRB)." Evidence suggests that bifidobacteria residing in the human gut have coevolved with human ancestors over more than 15 million years. We believe that this long process of coevolution is itself evidence that HRB have played a critically important role in human health.

***2 BB536 *Bifidobacterium longum* BB536**

A bifidobacterium that resides in the human intestinal tract and was originally discovered in an infant. It is highly tolerant of acid and oxygen—conditions to which bifidobacteria residing in humans are generally sensitive—allowing it to survive and reach the large intestine.

***3 Paper title and authors**

Short-term responsiveness of DNA methylation-based aging biomarkers to a multimodal intervention comprising exercise and dietary guidance involving daily consumption of yogurt containing Bifidobacterium longum BB536: an exploratory randomized controlled trial, https://doi.org/10.18632/aging.206386

***4 DNA methylation**

DNA methylation is a type of chemical tagging on DNA. It is mainly involved in regulating how genes function. Patterns of DNA methylation are known to change with age, and by combining and analyzing information from multiple sites, researchers have created various indicators that reflect how aging progresses. In recent years, such DNA methylation–based indicators have come to be widely used in aging research and in the assessment of health status.

***5 Cited reference**

Effect of long-term caloric restriction on DNA methylation measures of biological aging in healthy adults from

the CALERIE trial. *Nat Aging*. Nature Publishing Group; 2023; 3: 248–57

***6 DunedinPACE**

DunedinPACE is an indicator of the current pace of aging, calculated from DNA methylation information in the blood. A lower value indicates that aging may be progressing more slowly. In this study, we assessed the amount of change from the start of the trial to three months later to examine how this pace-of-aging indicator changed over the trial period. A larger decrease in this change value indicates that, compared with before the trial, the pace of aging shifted further toward slowing by the end of the trial period.

***7 Correlation analyses**

To examine whether changes in the different measures were related to one another, we performed correlation analyses using Pearson correlation coefficients. Pearson correlation coefficients are a measure of the strength and direction of the linear association between two continuous variables. Values closer to +1 indicate a stronger tendency to move in the same direction, values closer to −1 a stronger tendency to move in opposite directions, and values closer to 0 indicate little clear association. In this study, we used these correlation coefficients, along with their statistical interpretations (p-values), to assess whether there was a clear correlation between two sets of changes.

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