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Mitsubishi Chemical Corporation
Kyoto Institute of Nutrition & Pathology, Inc.

Spore-forming Lactic Acid Producing Bacteria Probiotic Demonstrated to Improve Growth Performance in Pigs

Mitsubishi Chemical Corporation (Head Office: Chiyoda-ku, Tokyo; President: Manabu Chikumoto; hereinafter "MCC") and Kyoto Institute of Nutrition & Pathology, Inc. (Head Office: Tsuzuki-gun, Kyoto; President: Takamitsu Tsukahara) have demonstrated that the spore-forming lactic acid producing bacteria probiotic, *Heyndrickxia coagulans* SANK70258[*1] (hereinafter referred to as "*H. coagulans*"), improves growth performance in pigs by strengthening intestinal barrier function. This research findings[*2] were published in "Frontiers in Veterinary Science" on May 28, 2025.

Unlike other common lactobacilli, spore-forming *H. coagulans* is resistant to acid and heat, thereby allowing it to survive the trip to the intestine where it can germinate and grow. MCC has been conducting research and development on *H.coagulans* with the aim of providing solutions to various challenges surrounding livestock management, such as soaring feed prices and the spread of infectious diseases. Previous studies have shown that the enhancing effect of *H.coagulans* on intestinal barrier function contributes to weight gain in broiler chickens. In this study, MCC investigated whether the same effect observed in broiler chickens could also be confirmed in pigs, which are the next most widely consumed livestock species.

As a result of the intervention study, pigs that received H.coagulans showed increased average daily weight gain, improved feed conversion ratio*3, and enhanced intestinal barrier function and safety compared to pigs that did not receive H.coagulans. These findings suggest that the intake of H.coagulans may promote weight gain in pigs by enhancing intestinal barrier function, thereby suppressing bacterial translocation *4.

H.coagulans has been reported to contribute to the improvement of immune function and intestinal barrier function, as well as the improvement of gut microbiota, in humans, fish, and livestock animals [*5], suggesting that it may exert similar effects across a wide range of species. The results of this series of studies have also shown the potential for reducing the use of antimicrobials in livestock animals in the future. MCC will continue to investigate the underlying mechanisms in detail and evaluate its efficacy.

[Members of the study group in this article]

・Food and Healthcare Group, Wellness Technology Dept., Technology Strategy Div.,
Advanced Solutions Business Group, Mitsubishi Chemical Corporation
Masanori Aida, chief researcher
Ryouichi Yamada, section leader

・Healthcare Business Group, Food and Healthcare Dept., Life Solutions Div.,
Advanced Solutions Business Group, Mitsubishi Chemical Corporation
Toshiki Matsuo, team leader

Kyoto Institute of Nutrition & Pathology, Inc.
Takamitsu Tsukahara, President
Takahiro Kawase, Manager, Analytical Department

[*1] *Heyndrickxia coagulans*（*Heyndrickxia coagulans* SANK70258）
Heyndrickxia coagulans is a spore-forming lactic acid bacterium discovered by Professor Ooki Nakayama (Professor Emeritus of University of Yamanashi) in 1949 and has been used as a probiotic over the years. It has the ability to survive stomach acid and reach the intestine alive. It has been reported that *H. coagulans* improves bowel movements, alleviates cold-like symptoms, and improves the condition of the skin in humans. *H. coagulans* has also been reported to contribute to somatic growth, antiinflammation, and infection control in livestock. The scientific name for *Bacillus coagulans* was changed to *Weizmannia coagulans* in 2020 and *Heyndrickxia coagulans* in 2023, and *Bacillus coagulans* SANK70258 and *Weizmannia coagulans* SANK70258 are the same strains as *Heyndrickxia coagulans* SANK70258.

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*2Information on the article
Title: Authors: Masanori Aida, Ryouichi Yamada, Takahiro Kawase, Toshiki Matsuo and Takamitsu Tsukahara
Journal title:
Linked page:

*3Feed conversion ratio
An index indicating the amount of feed (in kg) required for an animal to gain 1 kg of body weight; the lower the value, the higher the efficiency.

*4Bacterial translocation
A condition in which intestinal bacteria translocate into the bloodstream, triggering peripheral inflammation.

*5Information on the article
The effect of supplementation with Weizmannia coagulans strain SANK70258 to coccidia-infected broilers is similar to that of a coccidiostat administration. Vet Sci. 2022 Aug 3;9(8):406. doi: 10.3390/vetsci9080406

Dietary Weizmannia coagulans strain SANK70258 ameliorates coccidial symptoms and improves intestinal barrier functions of broilers by modulating the intestinal immunity and the gut microbiota. Pathogens. 2023 Jan 6;12(1):96. doi: 10.3390/pathogens12010096

Heyndrickxia coagulans strain SANK70258 suppresses symptoms of upper respiratory tract infection via immune modulation: a randomized, double-blind, placebo-controlled, parallel-group, comparative study. Front Immunol. 2024 Jun 17:15:1389920. doi: 10.3389/fimmu.2024.1389920.

Exploring spore-forming lactic acid bacterium Heyndrickxia coagulans SANK70258 as a promising probiotic for red sea bream (Pagrus major). Front Aquac. 2024 Nov 22:3:1450537. doi: 10.3389/faquc.2024.1450537

Contact:
Mitsubishi Chemical Corporation
General Affairs & Communication Division
Media Relations Department: +81-3-6748-7140 Contact form

Kyoto Institute of Nutrition & Pathology, Inc.
TEL：+81-774-99-7331