



Next-Gen. Immune. Resilience.

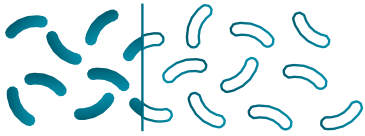
Ingredient Overview

Patented | GRAS | Vegetarian | Allergen-Free | Non-GMO | Heat-stable

IMMUSE[®]
(LC-Plasma)

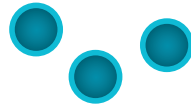
IMMUSE® Science Snapshot

What are Postbiotics?



Postbiotics like IMMUSE® (*Lactococcus lactis* JCM 5805) are defined as dead bacteria or dead probiotics with health benefits.*

What are Plasmacytoid Dendritic Cells (pDC)?



pDCs are a special subset of immune cells that have been described as a leader of the immune system.*

IMMUSE®: Novel Immune Support

30+ Studies
15+ Human Trials

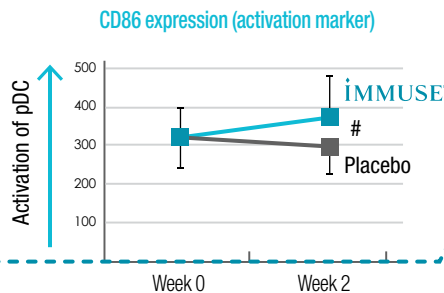
Researched by Kirin and backed by more than 30 studies, including 15 human trials, IMMUSE is the first postbiotic to directly signal plasmacytoid dendritic cells, consequentially providing comprehensive immune support.*

Key IMMUSE® Studies

IMMUSE signals and orchestrates pDC*¹

Researchers studied the effects of IMMUSE and its ability to increase pDC activation markers in fifty-one healthy subjects in a gold-standard trial.

■ IMMUSE® ■ PLACEBO



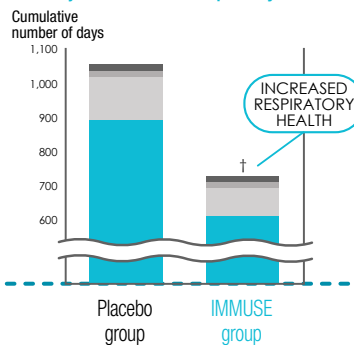
IMMUSE significantly increased CD86, a key activation marker of pDC, in the group who ingested IMMUSE.*

IMMUSE supports respiratory health*²

Researchers carried out a randomized, double-blind study on 213 healthy subjects during the winter season.

■ Severe ■ Moderate ■ Mild ■ Slight

Subjective score of respiratory health



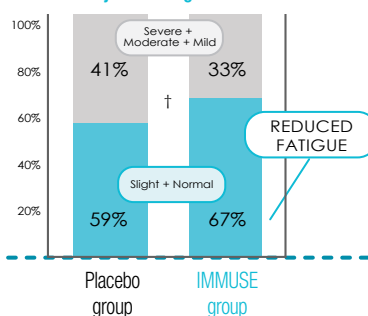
Measured over a 10-week period, individuals who consumed yogurts formulated with IMMUSE, increased respiratory health.*

† Statistically significant ($p < 0.01$)

Supports exercise performance by activating immune system*¹

Researchers carried out a randomized, double-blind study on fifty-one male athletes part of a university sports club. (Accumulated subjective symptoms of physical condition and fatigue after exercise.)

Subjective fatigue score



Individuals who consumed IMMUSE increased their respiratory health and experienced less fatigue.*

† Statistically significant ($p < 0.05$)

Unlock the key to comprehensive immune support with IMMUSE®*

1. Komano Y, et al., Efficacy of heat-killed *Lactococcus lactis* JCM 5805 on immunity and fatigue during consecutive high intensity exercise in male athletes: A randomized, placebo-controlled, double-blinded trial. *J Int Soc Sports Nutr.* 2018;15(1):39.
2. Sugimura T, et al., Effects of oral intake of plasmacytoid dendritic cells-stimulative lactic acid bacterial strain on pathogenesis of influenza-like illness and immunological response to influenza virus. *British Journal of Nutrition.* 2015;114(5):727-733.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

IMMUSE® Scientific Advantages

With increasing consumer awareness of the intricate connection between a healthy gut, immunity, and the importance of bacteria in the digestive system — postbiotics are set to transform the health supplement market, ushering in a new era of innovative products designed to optimize gut health and overall wellness.

Recently, there has been a notable boom in postbiotic research due to their potential health benefits (particularly for immune health) and important advantages over probiotics.

Based on application, the nutritional supplements segment currently captures the largest share with postbiotic supplements valued at \$10.8 million in 2024 and projected to reach \$30.5 million by 2034. Meanwhile, it's expected that their use in the food and beverage industry will significantly increase in the coming years.^{1,2}

60% of consumers worldwide

Are conscious about their immunity

\$3.0 Billion

Expected reach by 2031 for Global postbiotic market

6.8% Growth

from 2022 to 2031

IMMUSE®, a novel postbiotic strain, *Lactococcus lactis* strain Plasma (LC-Plasma), discovered by KIRIN has been shown to:

1. Support health days*
2. Promote year-round immune health*
3. Support respiratory health*
4. Signal the leader of your immune system for more comprehensive immune support*



What is IMMUSE®?

IMMUSE LC-Plasma is the first lactic acid bacteria that has been clinically researched to directly signal pDC, a special subset of immune cells, to provide innate and adaptive immune support.*

IMMUSE is supported by more than 30+ studies including 15+ human clinical trials. IMMUSE is also self-affirmed GRAS and applicable to wide variety of applications including tablets, capsules and foods.

What is a Postbiotic

In May 2021, the International Scientific Association for Probiotics and Prebiotics (ISAPP) published a consensus paper defining postbiotics as “a preparation of inanimate microorganisms and/or their components that confers a health benefit on the host.”

IMMUSE, a patented postbiotic, is a heat-killed *Lactococcus lactis* strain Plasma that has been shown to provide immune support at a cellular level.*

Bridging the Gap

The immune system is a complex structure that resides throughout our body. It contains many immune cell types, such as NK cells, T cells, B cells, Dendritic cells, Macrophages, and others that keeps your immune system functioning. Many of these cells are divided into two areas, innate and adaptive. The innate immune system provides the body, the first-line of defense against foreign substances. The adaptive immune system is more specialized and creates “muscle memory” to make the immune system quicker

and more resilient the next time it comes in contact with a pathogen.

Unlike most of the immune cells, pDCs straddle between innate and adaptive immune systems, playing a pivotal role within the immune system.* pDC have been described as leader of the immune system since they signal key immune cells and provide more comprehensive immune support.*

Pioneering Fermentation

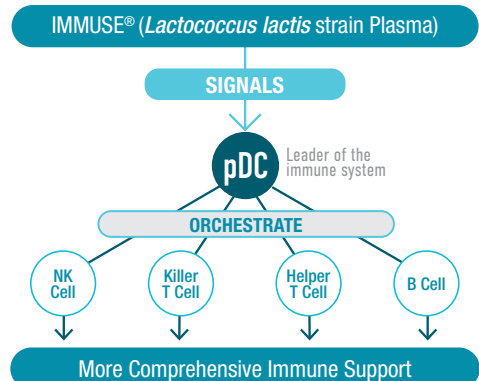
Kirin has widely been recognized as a fermentation leader for over 130-years. As part of the Kirin group, here at Kyowa Hakko, we're committed to improving lives through health science. In partnership with Kirin and Koiwai Dairy, a leading manufacturer of dairy products, we discovered the power of lactic acid bacteria for proactively managing immune health.*

Why IMMUSE®?

A strong immune system is critical for good health. Add IMMUSE, a novel postbiotic, to your next immune health formula and get your customer's immune system on the offense.*

- Signals and orchestrates pDC, leader of the immune system*
- Backed by more than 30+ studies
- Provides year-round immune support*

We're ready to fulfill your order at our Japan Food Safety Management certified facility.



For GRAS, non-GMO, allergen-free, heat-killed powder, visit [IMMUSEhealth.com](https://www.immusehealth.com)

1. Allied Market Research, "Postbiotic Market Size, Share, Competitive Landscape and Trend Analysis Report by Form, by Application: Global Opportunity Analysis and Industry Forecast, 2021-2031," December 2022.

2. Future Market Insights, "Postbiotic Supplements Market Outlook for 2024 to 2034," March 2024.

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IMMUSE® Marketing Advantages



Superior Formulation Benefits

Manufacturers and formulators will love the more practical benefits of IMMUSE®.

- **Postbiotic.** IMMUSE is a postbiotic, which means no need to worry about survivability of bacteria like you have to with probiotics.
- **Heat-stable.** IMMUSE is a heat-killed probiotic that is stable and heat resistant compared to probiotics, which means no refrigeration is needed.
- **Can be formulated in foods.** IMMUSE is self-affirmed GRAS and its efficacy has been proven in various foods over the last 10+ years.
- **Pure.** IMMUSE is a pure heat-killed powder that doesn't contain any food additives, artificial colors, artificial flavors or preservatives.
- **Vegetarian.** No animal origin material is used in IMMUSE.
- **Allergen-free.** IMMUSE doesn't contain any preservatives, artificial flavor or colors, wheat, grains, nuts, eggs, dairy, seafood, and animal derivatives.
- **Fermentation.** IMMUSE is produced using an innovative fermentation process.
- **Patented.** Kirin owns the global patent (US09549956) on IMMUSE.

- **NON-GMO Project Verified.** Produced without genetic engineering and compliant with the Non-GMO Project Standard.

IMMUSE® Product Applications

IMMUSE is a unique health ingredient that can be incorporated into a wide range of finished products designed to support immunity, productivity and overall performance:

- Dietary supplements
- Beverages
- Gummies
- Cereals & Protein bars
- Yogurts

IMMUSE® is Backed by Kyowa Hakko

Kyowa Hakko is an international health ingredient manufacturer and a world leader in the development, manufacturing and marketing of nutraceuticals, pharmaceuticals and food products. Part of Kyowa's dedication to ongoing scientific research, quality management and consumer education, IMMUSE leads the way in immune health research.



Your Immune Advantage

IMMUSE signals and orchestrates pDC (plasmacytoid dendritic cells) which are crucial to stimulating your body's natural defenses.*



Sports Nutrition Support

IMMUSE proactively supports the immune system for exercise.*



Productivity Support

IMMUSE's immune-supporting properties may also promote productivity at work.*

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IMMUSE® Claims

The following claims are provided for informational purposes and should be reviewed by your legal counsel prior to use in marketing materials, including product labels.

Clinically Studied Dose: 100 Billion Cells

- IMMUSE® is clinically researched to support health days*
- IMMUSE® promotes year-round immune health*
- IMMUSE® supports respiratory health*
- IMMUSE® signals the leader of your immune system for more comprehensive immune support*
- IMMUSE® is an immune activator for more comprehensive immune support*
- IMMUSE® signals plasmacytoid dendritic cells (pDCs), a leader of the immune system*
- IMMUSE® puts pDCs, a leader of the immune system, into action*
- Immune support at a cellular level
- IMMUSE® proactively supports immune system health*
- IMMUSE® gets your immune system ready*
- IMMUSE® stimulates your body's natural defense system*
- Provides immune support during High Intensity Training
- Proactively supports the immune system for exercise (training)*
- Supports exercise performance by signaling the immune system*
- Research suggests that IMMUSE® immune supporting properties may also promote worker productivity*

IMMUSE® Specifications

Ingredient:

Dried *Lactococcus lactis* strain Plasma powder (inactivated)

Nutritional Profile

Protein: 76.9 g/100 g
Total Fat: 3.6 g/100 g
Total Carbohydrate: 7.3 g/100 g
Sodium: 0.55 g/100 g
Total Calories: 369 kcal/100 g

Specification

Appearance:	Ivory colored powder
Loss on Drying:	Not more than 7%
Cell Count:	Not more than 2.8×10^9 /mg
Heavy metals:	Not more than 20 ppm
Arsenic (as As ₂ O ₃):	Not more than 0.2 ppm
Heavy metal (as Pb):	Not more than 0.4 ppm
Total plate count:	Not more than 3,000 cfu/g
Coliform:	Negative/0.1g

Manufacturing Process

IMMUSE (*Lactococcus lactis* strain Plasma) is manufactured by Koiwai Dairy Products in Japan and is distributed by Kyowa Hakko USA, both subsidiaries of Kirin Holdings Company, Limited. It is made using a proprietary cultivation, separation, pasteurization and drying process with no raw materials of animal origin, no genetically modified source (Non-GMO), and with no use of organic solvents. The process eliminates any risk of Transmissible Spongiform Encephalopathy (TSE) or Bovine spongiform encephalopathy (BSE) contamination. IMMUSE is Prop 65 compliant and is composed of 100% heat-killed *Lactococcus lactis* strain Plasma.

Allergen-Free

No preservatives, wheat, grains, nuts, soy, eggs, dairy, fish, shrimp, crab, squid, orange, apple, banana, Japanese yam, mackerel, kiwi fruit, peach, abalone, matsu take, gelatin, animal derivatives, sesame, or artificial flavors or colors.

Stability

- Stable under normal handling conditions

Safety Studies

- No safety concerns associated with excessive intake of heat-killed *Lactococcus lactis* strain Plasma capsules (5x the dose) in humans¹⁷

Storage

- Avoid a high temperature, high humidity, and direct rays of the sun
- Expiration date: 36 months (1080 days) after production

Packing

- MOQ is 10 kg. Packed in ten 1 kg, aluminum laminated bags that are heat-sealed

Certifications

- JFS-C certified facility

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IMMUSE®

Generate breakthrough sales with IMMUSE, an ingredient designed to provide comprehensive immune support.*

For more information on IMMUSE, scan code below or visit IMMUSEHealth.com.



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