

BE NATURE FRIENDLY

We provide healthy life
from nature



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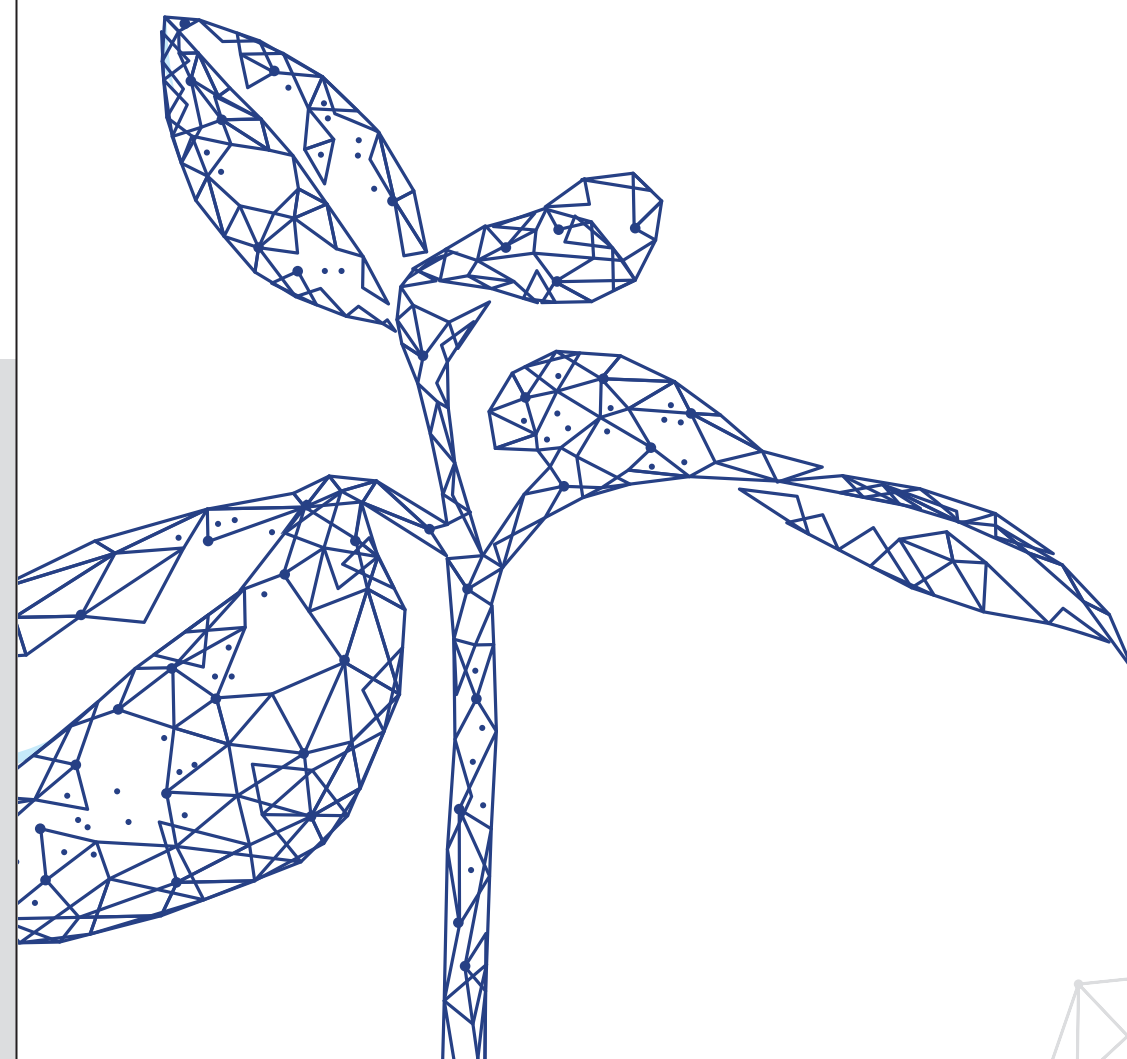
Plant&Research institute

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Version 1



About VITECH



LEADER IN HEALTH FUNCTIONAL FOOD INDUSTRY

Enterprise Specialized in Functional Health Food Materials Leading Future Market



VALUE CREATION

Enterprise Developing & Offering Variety of Natural Raw Materials, and Realizing Value of Health for People



CUSTOMER SATISFACTION

Enterprise Always Deliberating from Customer's Position for Customer Satisfaction Creating Added Values



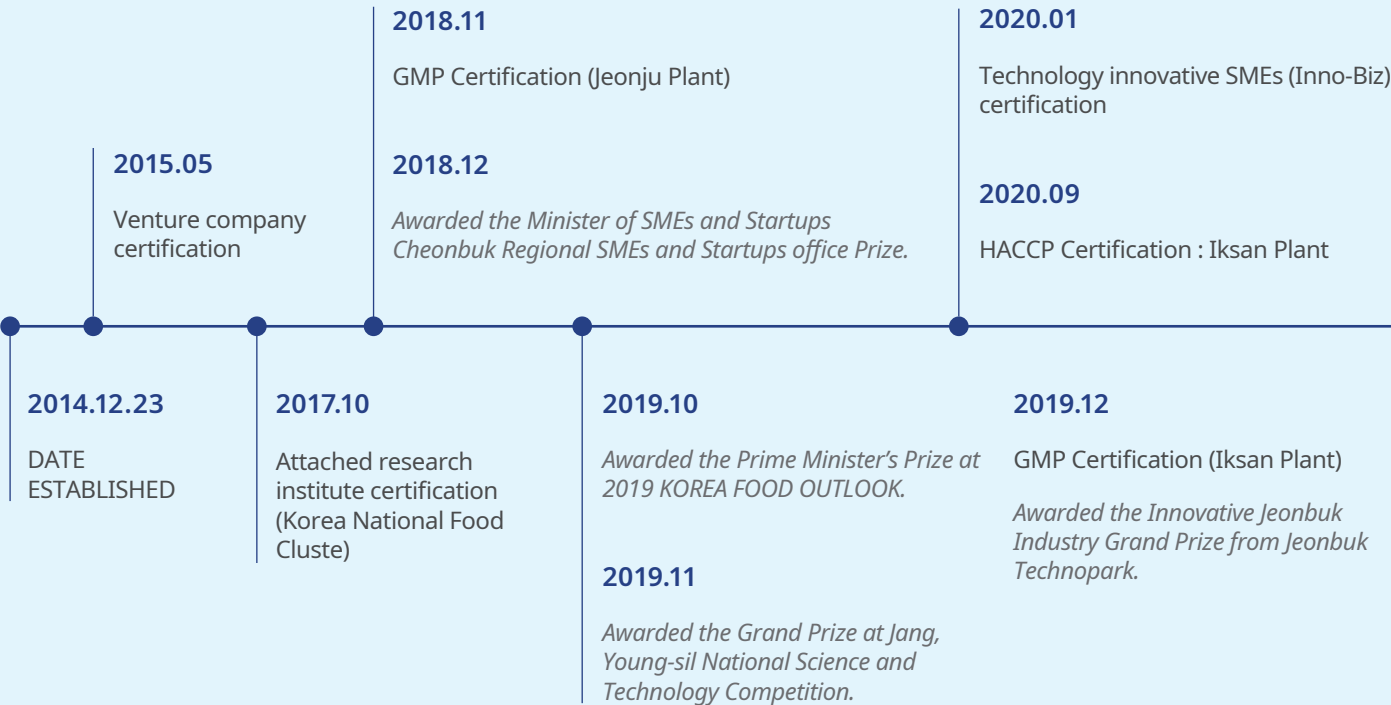
CHALLENGING AND CREATIVE THINKING

Enterprise Growing with Creative Thinking and Sense of Challenge

HISTORY & PROFILE OF VITECH

In-House Technical Capability

- » Patent: 'Powder Composite Containing Medium-chain Fatty Acid and Its Manufacturing Method (KR 10-1701326)' and 6 other patents registered with 9 patents filed.
- » Development of Raw Materials for Functional Health Food (Immunity improved, Joint health improved, Skin health improved, Stomach health improved, Respiratory organ health improved, Andropause symptom relieved, Body fat reduced, and etc.)
- » Composition for improving stomach function comprising fermented kiwi/KR 10-2021-0139025



Patent

Patent Registration List

- 01 | Powder Composition Containing Medium Chain Triglyceride and Method for Preparing Thereof (KR 10-1701326)
- 02 | Preparation method of enzyme treated royal jelly and Enzyme treated royal jelly (KR 10-1900258)
- 03 | Method for manufacturing concentrate of Aronia (KR 10-1978336)
- 04 | Composition for improving of skin conditions, comprising the substances obtained from the refined fish oil as the effective component (KR 10-2006126)
- 05 | Composition for anti-obesity (KR 10-2087634)
- 06 | Pharmaceutical composition for enhancing immune function comprising enzyme treated royal jelly as an active ingredient (KR 10-2173591)
- 07 | Composition for improving skin conditions comprising omega-7 derived from refined fish oil and red ginseng (KR 10-2286969)

Patent Application List

- 01 | A pharmaceutical composition for preventing or treating inflammatory bone joint diseases comprising an enzyme-treated royal jelly powder (KR 10-2019-0089662)
- 02 | Fermented kiwi powder for improving bowel function and method of preparing the same (KR 10-2019-0152201)
- 03 | Purified Fish Oil Powder Compostion Containing Omega-7 Fatty Acid and Method for Preparing the Same (KR 10-2020-0053336)
- 04 | Kiwi fermentation composition using lactic acid bacteria, preparation method thereof, and use thereof (KR 10-2020-0132642)
- 05 | Manufacturing methods of heat-killed strain powder oriented from Phellinus linteus, heat-killed strain powder and uses thereof (KR 10-2021-0049440)
- 06 | Manufacturing methods of fermentation kiwi powder using strain-derived from kiwi and fermentation kiwi powder manufactured by thereof (KR 10-2021-0051806)
- 07 | Composition comprising Thyme extracts having the effects of inhibiting inflammatory response to fine dusts (KR 10-2021-0052044)
- 08 | Manufacturing methods of enzyme treated royal jelly, enzyme treated royal jelly manufactured by thereof and composition for improving joint health (KR 10-2021-0055865)
- 09 | Manufacturing methods of heat-killed strain powder oriented from kimchi, heat-killed strain powder and user thereof (KR 10-2021-0056292)
- 10 | Composition for improving stomach function comprising fermented kiwi (KR 10-2021-0139025)

Thesis (published)

List of thesis entries

- 1 | Anti-inflammatory and immune-enhancing effects of enzyme-treated royal jelly, Applied Biological Chemistry, 61(2), 227-233, 2018
- 2 | Antioxidant Activity of Royal Jelly Hydrolysates Obtained by Enzymatic Treatment, Korean Journal for Food Science of Animal Resources, 38(1), 135-142, 2018
- 3 | Effects of 7-MEGA™ 500 on Oxidative Stress, Inflammation, and Skin Regeneration in H2O2-Treated Skin Cells, Toxicological Research volume 34, 103-110 2018
- 4 | 7-MEGA™ 500 regulates the expression of COX-2, MMP-3 and type 1 procollagen in UVB-irradiated human keratinocytes and dermal fibroblasts, Mol Med Rep, 21(3), 1346-1355, 2020
- 5 | Alleviation of Ultraviolet B-Induced Photoaging by 7-MEGA™ 500 in Hairless Mouse Skin, Toxicol. Res. 35(4), 353-359, 2019

BUSINESS PROFILE

01

ODM/OEM Finished Product and Raw Material Production

Variety of products such as Lactobacillus, Enzy-R™, 7-Mega™, Fermented gold kiwi powder, Parabiotics safely produced meeting the needs of consumers.

- » Use of GMP facility (Cultivation/Extraction/Enriching/Drying of natural substances)
- » Production and technical support for commercialized products
- » Indigenous material sharing and supply support

02

Domestic and Overseas Material Sourcing, Research and Development

New raw materials based on the natural raw materials constantly surveyed and developed. Variety of in vivo, in vitro data materials based on scientific theory and experiment secured in-house.

- » Market Analysis and Forecast
- » Market Information Provision

03

Individually Certified Raw Material Application

» Immunity improved, Joint health improved, Skin health improved, Stomach health improved, Respiratory organ health improved, Andropause symptom relieved, Body fat reduced, and etc.



PRODUCTION PLANT



Jeonju Plant	
Location and Area	Major Facility Status
» 2nd Floor, Biopark Industrial Center, Jeonbuk Institute for Food-Bioindustry	» GMP certification(2018.08)

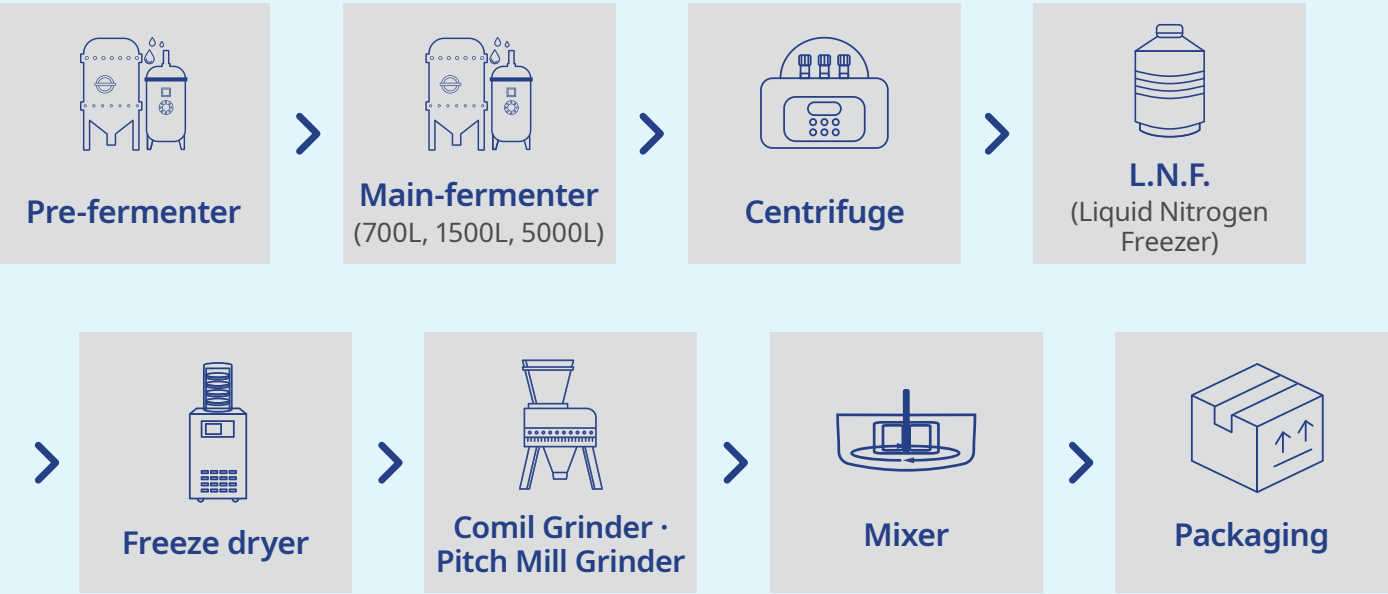


Iksan Plant	
Location and Area	Major Facility Status
» 174, Gukgasikpum-ro, Wanggung-myeon, Iksan-si, Jeollabuk-do, Republic of Korea (Located in Korea National Food Cluster.)	» GMP certification (2019.12) » HACCP certification (2020.09) » L.N.F. Facility under operation.



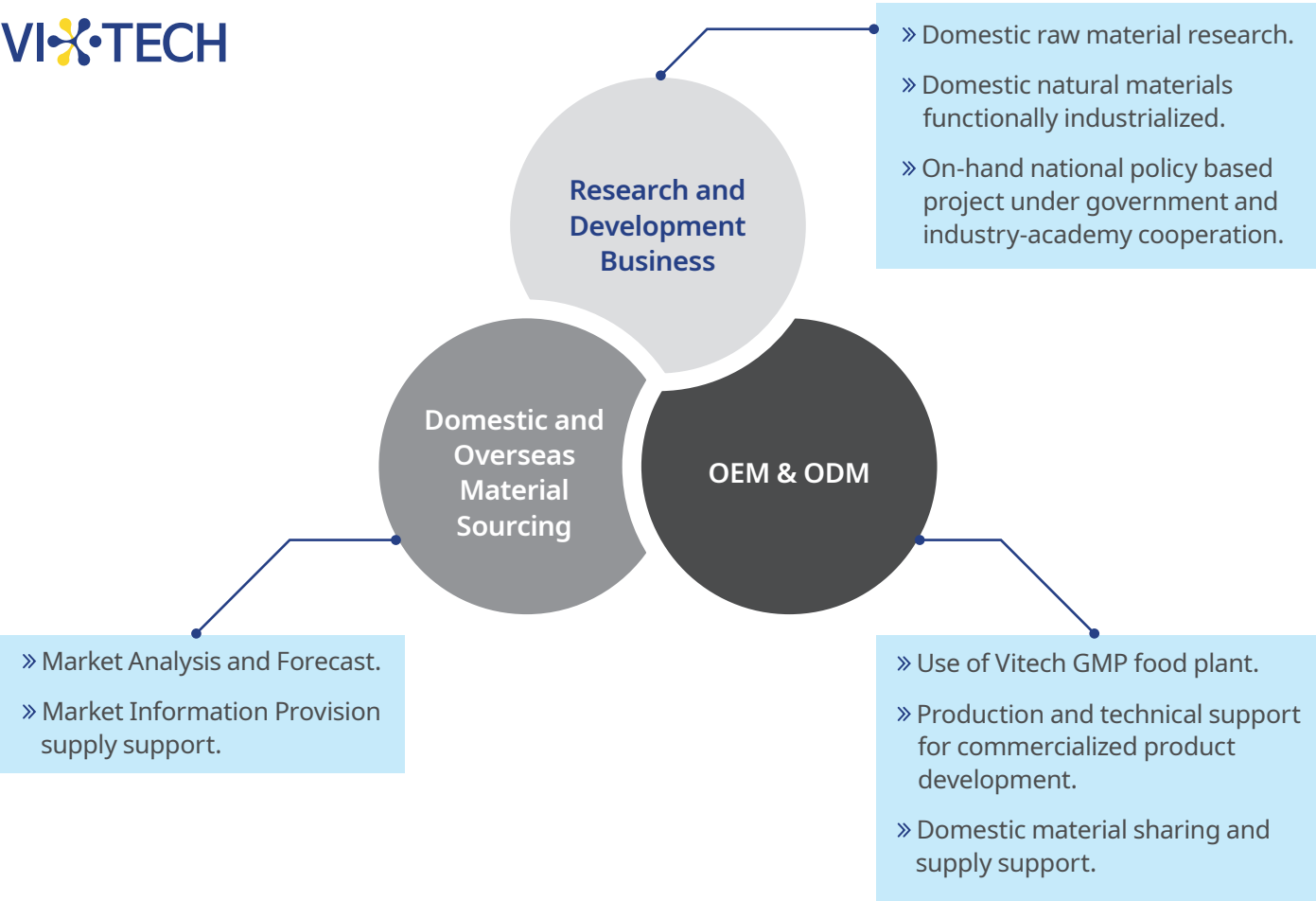
Iksan No. 2 Plant (Plan)	
Location and Area	Major Facility Status
» 1286, Heungam-ri, Wanggung-myeon, Iksan-si, Jeollabuk-do, Korea. (Located in Korea National Food Cluster.) » Land:12,883m²/Building Area:5,950m²	» GMP » HACCP

PRODUCTION FACILITIES



ACTIVITIES AT ATTACHED RESEARCH INSTITUTE

- » Development of high value added raw substances for new materials and functional products through intensive research and development activities.
- » Offering of best quality products fit to customer needs taking advantage of own technologies and know-how.
- » Total service solution provided for customer business growth by creating futuristic trend.

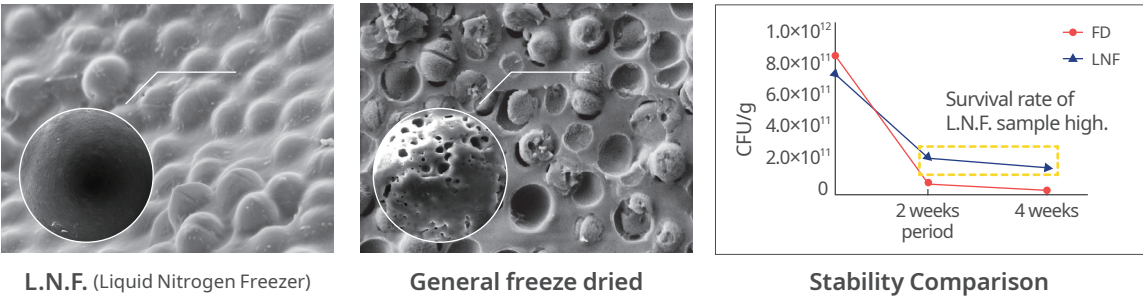


RESEARCH INSTITUTE



In-house Independent Production Facility – L.N.F

- DIFFERENCE POINT**
- 1 | Lactobacillus manufactured using the facility patented in South Korea and U.S.A.
 - 2 | High purity liquid nitrogen used applicable to use for food with no risk of residues.
 - 3 | Manufacturing method employed first in Korea for Lactobacillus production.
 - 4 | Lactobacillus vitality increased with L.N.F. → Efficacy enhanced.
- APPLICATION RANGE**
- 1 | Probiotics ODM/OEM production.
 - 2 | Freeze drying process applied vegetable raw materials.
 - 3 | Functional health food materials with fast (taste, color, odor) degeneration by heating.
 - 4 | Individually certified functional health food raw materials.



Produts

01

LACTOBACILLUS

- » Lactobacillus production facility construction completed.
- » Currently OEM and ODM manufacturing ongoing for lactobacillus and functional health food business enterprises.

• Vitech's Unique Lactobacillus Based On Natural Raw Materials

Strain	Strain-VI	Origin
<i>L. lactis</i>	VI-01	Kiwi
<i>L. paracasei</i>	VI-02	Kiwi
<i>L. plantarum</i>	VI-05	Phellinus Igniarius
<i>L. fermentum</i>	VI-06	Phellinus Igniarius
<i>L. plantarum</i>	VI-07	Green tea
<i>L. plantarum</i>	VI-08	Kimchi
<i>L. curvatus</i>	VI-09	White kimchi
<i>L. sakei</i>	VI-10	Kimchi
<i>P. acidilactici</i>	VI-11	Fermented Soybean Paste
<i>L. rhamnosus</i>	VI-13	Baby feces

02

PARABIOTICS

» What is Parabiotics? = Heat Killed Bacteria

The Parabiotics means (either digested or broken) cells showing no vitality or a sort of unprocessed cell extracts, which has been arousing people's interest for its useful effects like long shelf life, safety, adjustable immunity, modification capability of biological reaction, reduction of cholesterol, and anti-flammation effect.

• Benefits of parabiotics

Heat Killed Bacteria
(Para-biotics = Ghost-biotics)

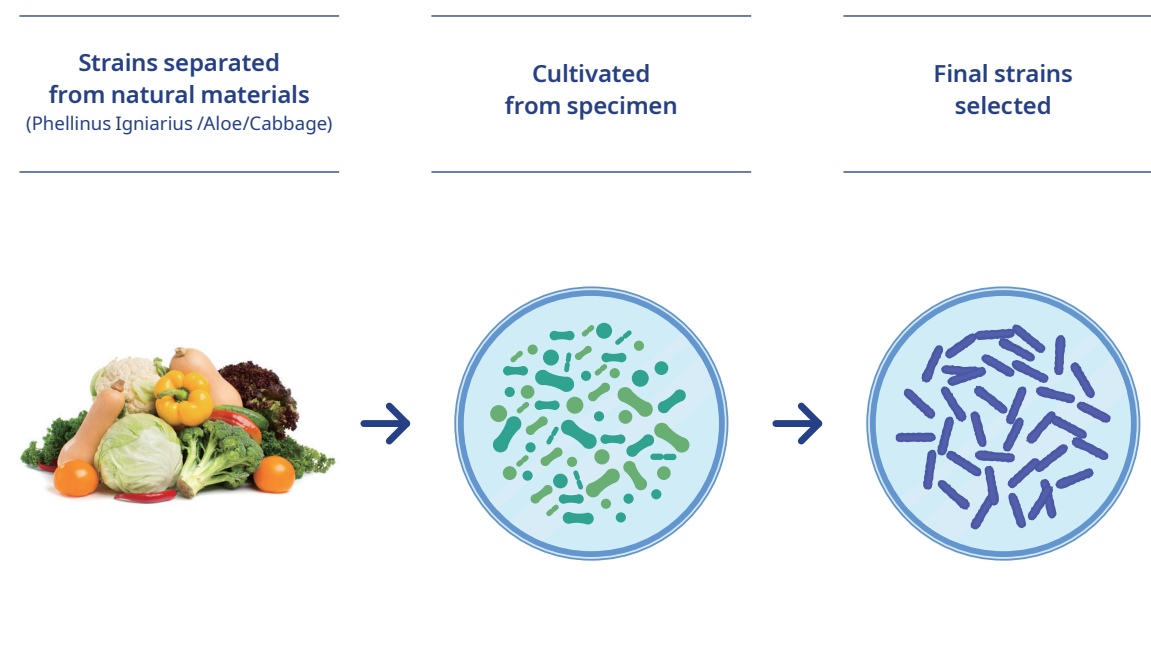
- » Easy to preserve and circulate.
- » Working right away not settling in intestines.
- » Safe intake allowed with no side effect.
- » Immune cells stimulated providing food.

03

NATURAL MATERIALS (Phellinus Igniarius/Aloe/Cabbage)

» Heat Killed, Naturally Oriented Lactobacillus Bacteria
+ Natural Extract (prebiotics) + Fermented Product (postbiotics)

The Heat Killed, Naturally Oriented Lactobacillus Bacteria + Natural Extract + Fermented Product composite offers lots of specialized and highly effective values, different from existing competitive products limited in promoting only intestines health, by developing the premium lactobacillus substances and applying them to functional health products.



04

Fermented GOLD KIWI POWDER



- » The Fermented Gold Kiwi provides variety of healthy byproducts produced from the metabolism of probiotic bacteria such as amino acids, peptides, vitamins, minerals, organic acids, dietary fibers, oligosaccharides, and polyphenols.
- » Highly important in controlling health conditions and maintaining microorganisms.
- » Healthy digestion promoted for Actinidain, a protein decomposing enzyme, contained.
- » Low GI (Glycemic) index.
- » Bowel evacuation promoted by abundant fibroid materials.
- » Toxins discharged from intestinal organs.




» 3 Steps Fermentation in FGK

- 1 step 5 species probiotics Fermentation (Activation)
- 2 step 5 Species probiotics Fermentation (Increase in bacteria)
- 3 step 5 species & Gold kiwi Fermentation (Postbiotics & Probiotics)

» What is Postbiotics?

The Postbiotics, a substance produced from metabolism of probiotics, directly and indirectly offers useful effects to hosts.

The highly fibrous Kiwi PURÉ E containing diverse nutrients like vitamins, minerals & etc. is selected as a **Postbiotics**. The Fermented Gold Kiwi Powder is a natural product (**Postbiotics**) generated by the metabolism of bacteria as fermenting the lactovacilli (**Probiotics**) with Kiwi PURÉ E.

Prebiotics	Probiotics	Postbiotics
		
Eating fiber	Fermented by beneficial bacteria	Production of Short-chain fatty acids, amino acids, peptides and monosaccharides.
Kiwi PURÉE Food	5 lactovacilli mix Strain	Fermented Gold Kiwi Powder Metabolism Product



- » Immunity improving and promoting effect exists.
- » Water solubility and fluidity improved through enzyme treatment.
- » 47~55kDa protein causing allergy removed.
- » Ease of indigestion and absorption thanks to the over 4.5% of indicator component
- » 10-HAD contents and increase of free amino acid.
- » Contains abundant Vitamin A, B1, B2, B6, B12, C, D & E along with the enzymes and acetylcholine controlling autonomic nervous system & blood pressure.

» Allergy Protein Decomposition Experiment

Decomposition of diverse molecular weight protein through enzyme treatment process, and almost no presence of 47~55kDa protein causing allergy reaction comparing with common royal jelly confirmed.

Allergy Protein Decomposition Experiment

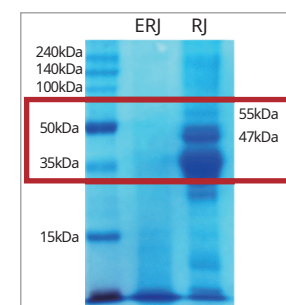


Figure 1. The removal of two allergen proteins by enzyme treatment. ERJ: enzyme-treatment royal jelly, RJ: non-enzyme treated royal jelly.

Decomposition of diverse molecular weight protein through enzyme treatment process, and almost no presence of 47~55kDa protein causing allergy reaction comparing with common royal jelly confirmed.

Water solubility improvement experiment



Figure 2. Allergy protein (47~55kDa) of ERJ and RJ were measured by western blot. ERJ, Enzyme-treated Royal Jelly; RJ, Non enzyme-treated Royal Jelly

When mixed with purified water at 25°C, it is visually confirmed that general royal jelly does not mix well, but it is confirmed that Enzy-R™ (ERJ) mixes well.

» Increase of NK Cell (natural killer cell) Vitality, a Critical Indicator for Enhancing Immunity

Macrophage reproductive integrity of Enzy-R and the vitality of NK (Natural Killer) cells increased respectively depending on their concentration levels.

Improvement of NK-Cell vitality indicator important for promoting the immunity and macrophage reproduction confirmed depending on the Enzy-R concentration level.

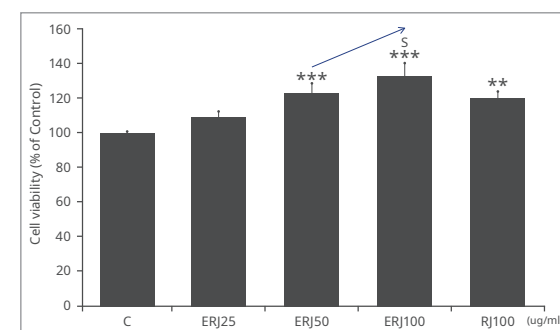
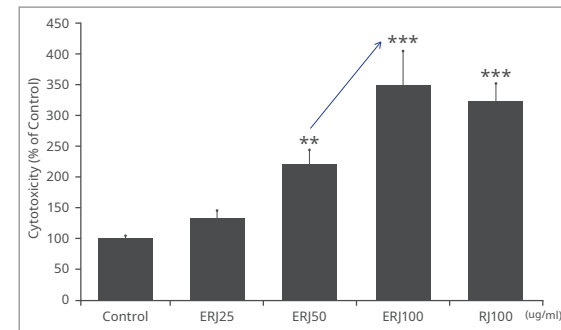
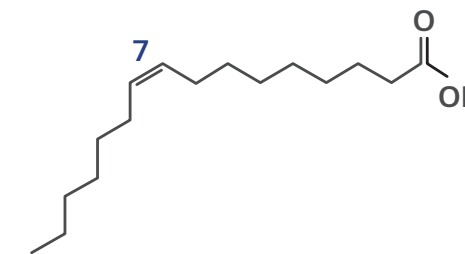
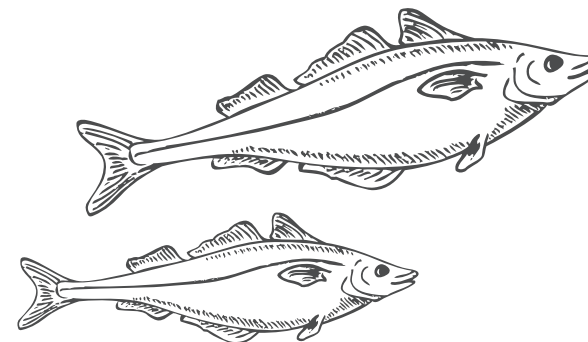


Figure 2. Effect of ERJ on RAW 264.7 cell viability and NK cells activity. Mean±SD. *p < 0.05, **p < 0.01, ***p < 0.001, compared with RJ; \$p < 0.05, \$\$\$p < 0.01, \$\$\$\$p < 0.001, compared with RJ100; ERJ, Enzyme-treated Royal Jelly; RJ, Non enzyme-treated Royal Jelly.



» What is 7-Mega™?

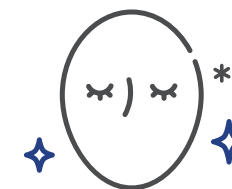
The 7-Mega™ fatty acid, an unsaturated fatty acid, contains 16 carbon elements having the double bond presence at the 7th carbon position from ω side.



※ Palmitoleic acid (16:1, n-7)

» Diverse Functions of 7-Mega™

Skin moisturizing



» Increasing the skin moisturizing of 7-Mega™ digested group confirmed as a result of measuring the skin moisture content and transdermal moisture loss.

» In vivo test conducted by the Ministry of Food and Drug Safety of Korea completed. (Underway individually certified)

Insulin Sensitiveness Increase

	Baseline	After 9 month	P.
Palmitoleic (16:1, n-7)	4.79±0.12	5.42±0.13	
2 h glucose (mmol/l)	7.05±0.17	6.62±0.18	0.004
Fasting insulin (pmol/l)	56±3	52±3	0.007
2 h insulin (pmol/l)	493±40	432±48	0.001

» Better organic effect verified from the in-vivo experiment result with the 7-Mega™ digested group in comparison with the non-digestion group in terms of blood sugar level, insulin concentration level and insulin reducing speed measured on 2 hours after meal.

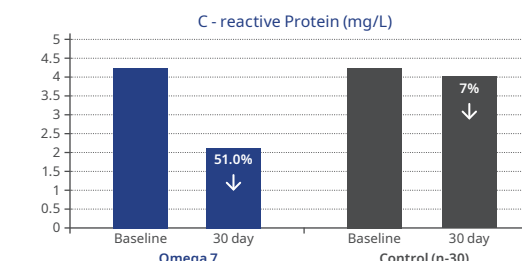
→ Higher insulin sensitiveness with higher 7-Mega™ content in blood.

Weight Control

	Baseline	After 9 month	P.
Palmitoleic (16:1, n-7)	4.79±0.12	5.42±0.13	
Age (years)	45±1	46±1	
Body weight (kg)	84.4±1.7	81.9±1.6	<0.0001
Body mass index (kg·m ⁻²)	29.0±0.5	28.2±0.5	<0.0001
Body fat (%)	32.3±0.7	31.2±0.9	0.007
Waist circumference (cm)	96.7±1.4	93.6±1.3	<0.0001
Total body fat _{MRT} (kg)	25.5±1.0	23.8±1.0	0.0002
Visceral fat _{MRT} (kg)	3.02±0.18	2.61±0.17	<0.0001
Liver fat _{MRT} (%)	6.17±0.69	3.86±0.43	<0.0001

» Weight, body mass index, body fat & etc. reduced overall.

Inflammation Cure



» What is CRP(C-reactive protein)?

CRP is an acute phase reactant produced in liver within several hours and secreted to circulating blood once the inflammation is developed. The increase of CRP means the presence of inflammation, and the decrease means the activation of anti-inflammation vitality.