








GRAPE KING BIO



CH3 Innovation and R&D

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Target Formulation

	Material Innovation and Product Nutrition	Customer Service	Brand Marketing
Progress achieved in 2024	<ol style="list-style-type: none"> Annual publication number: 29 > 20 Annual number of patent applications: 24 > 20; number of patent applications: 44 > 20 	<ol style="list-style-type: none"> Telephone customer service satisfaction rate is higher than 95%. The new comprehensive customer database (CDP) has been built, imported and enabled in 2024. Purchase healthy ESG recycling boxes. 	<ol style="list-style-type: none"> All own-brand marketing plans were completed as scheduled. Complete the first phase of internal ESG core value promotion. Complete the ESG image video, which will be used in subsequent community and VIP visits.
Short-term Targets for 2025-2026	<ol style="list-style-type: none"> Research functional materials for relevant issues such as osteoarthritis, sarcopenia, kidney damage, fatigue, sports performance improvement, in response to the aging population, declining birth rates, and the continuous growth of the population engaging in sports. Research and development, mass production, and patent applications for next-generation probiotics (NGP) will be carried out, given their potential not only as food or dietary supplements but also as therapeutic drugs. The Bioengineering Center and Innovation Research Center are expected to submit over 20 patent applications in 2025 related to material functionality applications and corresponding product development strategies. 	<ol style="list-style-type: none"> Regularly assess relevant indicators through satisfaction surveys to increase “complete satisfaction” rates. Our customer service staff participate in training organized by professional institutes each year and obtain related certificates. Conduct product refresher training courses led by professional nutritionists to enhance product expertise. Establish a database of frequently asked questions related to quality issues to ensure consistency and accuracy in service quality. Establish a new Customer Data Platform (CDP) database to analyze, track, and manage customer interactions and integrate data to greatly strengthen marketing efficiency and customer service. 	<ol style="list-style-type: none"> Keep striving to be “A health expert for the entire family” by providing the public with healthy and safe products, and consistently promoting our image. Continue to strengthen awareness of health food and energy drinks for younger groups. Brand Refresh Plan: packaging upgrade, online store upgrade. Clearly demonstrating our ESG commitment.
Mid-term Targets for 2027-2028	<ol style="list-style-type: none"> Complete commercial production on 3 novel biotechnology materials for addiction reduction, premenstrual syndrome improvement, ADHD improvement, Parkinson’s disease support, sports performance enhancement, muscle building and fat loss, sleep maintenance, and kidney health. Establish specifications and commence pre-clinical animal trials for new plant-based medicines, gradually strengthening our ability to become a sophisticated API manufacturer. Analyze current major health trends and form cross-industry alliances where necessary to design products for specific groups and health needs. Develop formulations and products that adhere to environmental protection and sustainability concepts. 	<ol style="list-style-type: none"> Continually conduct product refresher training courses led by professional nutritionists to enhance product expertise. Continuously optimize a database of frequently asked questions related to customer quality to ensure consistency and enhance customer trust in our quality. Enhance customer satisfaction successfully through the utilization of the Customer Data Platform (CDP) and the integration of the CTI system, which can predict potential issues and concerns that customers may have with purchased products or services. Proactively address these concerns and provide customers with the necessary resources to increase their satisfaction. 	<ol style="list-style-type: none"> Strengthen mechanisms related to an OEM brand and use relevant promotion materials to expand our reach into international markets beginning with ODM/OEM services. We may also expand into other markets using our own private label brands. Establish a promotional policy and brand image focused on responsible advertising, sales, and accountability labeling in response to the ESG trend.
Long-term Targets for 2029 and beyond	<ol style="list-style-type: none"> Complete commercial production for 6 biotechnology cosmetic ingredients with acne treatment, anti-allergy, skin car, and hair care properties. Complete commercial production on 6 novel biotechnology materials for addiction reduction, premenstrual syndrome improvement, ADHD improvement, Parkinson’s disease support, sports performance enhancement, muscle building and fat loss, sleep maintenance, and kidney health. Continue to track food and health industry trends, and form cross-industry alliances with local companies where necessary to develop formulations and products with unique features that comply with the needs of specific groups while adhering to environmental protection and sustainability concepts. 	<ol style="list-style-type: none"> Establish a complete customer service and nutritionist team to provide comprehensive health, diet, and lifestyle recommendations to customers based on data analysis and historical records. 	<ol style="list-style-type: none"> Form alliances with overseas and local brands, or further strengthen our corporate advantages through acquisitions as we work to become an international brand.
Corresponding SDGs	 		 

3.1 Innovation Management and Patents

General manager of
Biotech Research Institute
Jin-Chu Chen



Material R&D at our Biotech Research Institute incorporates cutting-edge technologies and collaborations with experts. Our products have achieved successes both at home and overseas, and we hope to enhance the health of the public.

Director of Biotech
Research Institute
Yen-Lien Chen



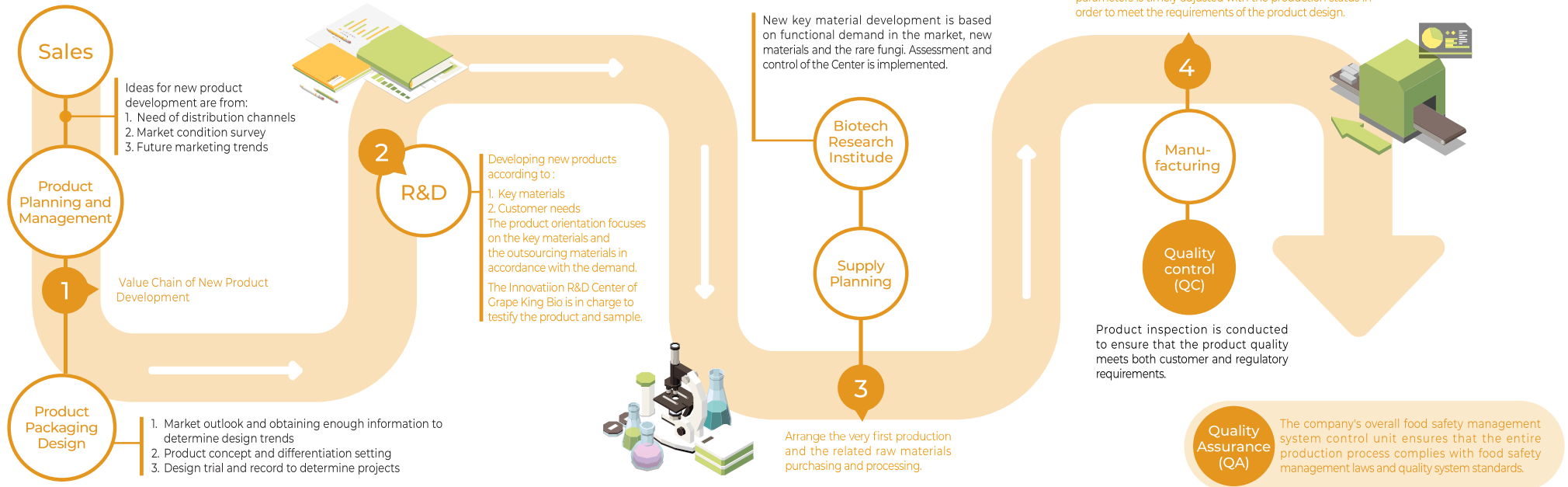
Grape King Bio's fungal fermentation technology serves as an industrial benchmark. We will continue to develop new technologies to meet the future needs of society.

Vice Director of Biotech
Research Institute
Ya-Ling Liu



Product Innovation and Sustainability

Innovation and R&D Key issues: Innovation and R&D









Management Approach	Key issue-Innovation and R&D	
Policies	Combine core capabilities, external research, and innovation units to develop unique Grape King Bio functional materials or formulations in response to consumer demands and market trends.	
Commitments	We strive to ensure product safety and legal compliance while developing products for appropriate target groups.	
Targets	Short-term	<ul style="list-style-type: none"> In response to our aging society and the ongoing coronavirus pandemic, we screened and researched functional materials for relevant issues such as osteoarthritis, sarcopenia, infertility, fatigue, sports performance improvement. Due to the global increase in health-consciousness and environmental awareness in diets, research and development are being conducted on fermented-source alternative protein materials derived from fungi and their derivatives. The Biocenter and Innovation Research Center are expected to submit over 30 patent applications in 2025 related to material functionality applications and corresponding product development strategies.
	Mid-term	<ul style="list-style-type: none"> Complete commercial production on 3 novel biotechnology materials for PMS, ADHD, Parkinson's disease, enhancing athletic performance, building muscle and losing fat, improve sleep and kidney health. Establish specifications and commence pre-clinical animal trials for new plant-based medicines, gradually strengthening our ability to become a sophisticated API manufacturer. Analyze current major health trends and form cross-industry alliances where necessary to design products for specific groups and health needs. Develop formulations and products that adhere to environmental protection and sustainability concepts.
	Long-term	<ul style="list-style-type: none"> Complete commercial production for 6 biotechnology cosmetic ingredients with anti-aging, anti-allergy, skin care, and hair care properties. Complete commercial production on 6 novel biotechnology materials for improving PMS, ADHD, Parkinson's disease, enhancing athletic performance, building muscle and losing fat, improve sleep and kidney health. Continue to track food and health industry trends, and form cross-industry alliances with local companies where necessary to develop formulations and products with unique features that comply with the needs of specific groups while adhering to environmental protection and sustainability concepts.
Responsibilities	External responsible unit: Food and Drug Administration of the Ministry of Health and Welfare, Department of Health of Taoyuan City Government.	
Resources	In 2024, our Innovation and Research Center newly hired 2 employees with a graduate degree.	

Management Approach	Key Issue-Innovation and R&D
Specific Performance	<ul style="list-style-type: none"> ✓ Received 34 gold medals, 3 silver medals, 1 bronze medal and 19 special awards at the International Invention Awards. ✓ Received IUFOST Global Industry Award. ✓ Antrodia cinnamomea was awarded a Bronze medal of National Biotechnology and Medical Care Quality Award. ✓ Received SNQ (Symbol of National Quality) certification for 3 products. ✓ Won 2024 Hsinchu Science Park R&D Accomplishment Award, with a NT\$400,000 prize. ✓ Won 2024 Hsinchu Science Park Innovative Product Award, with a NT\$350,000 prize. ✓ Received 2024 Taoyuan Golden Award ESG - Environmental Sustainability. ✓ Continued to extend the efficacy of key materials such as Lactic acid bacteria, Fungal alternative protein material, Hericium erinaceus, Hirsutella sinensis, and others.

Continued development and innovation is an important component of sustainable management. Grape King Bio is committed to innovation and development of different products and services, and we continue to invest our resources and efforts. Development and applications at our Biotech Research Institute and Innovation and Research Center are conducted in tandem with domestic and foreign institutes. We developed a variety of products and components to attract collaboration with other associations and have submitted applications for multiple patents, showcasing our great achievements. Grape King Bio invested NT\$291,906 thousand dollars in innovation and R&D in 2024.

Innovative Research and Development Information	Unit	2022	2023	2024
R&D Expense	NT\$ Thousand	289,884	289,545	291,906
R&D Full-time Employees	Full-time employees	140	123	147
Percentage of R&D Expense to Sales	Percentage	3%	3%	3%

Major Milestones for 2024

-  Awarded the IUFOST Global Industry Award
-  Received the Bronze medal of National Biotechnology and Medical Care Quality Award - Antrodia cinnamomea
-  Awarded the SNQ (Symbol of National Quality) - Nutritional Health Food Category / Health Food Group - Kang Er Chang Pro & Prebiotics and Kang Er Dong Pro & Prebiotics
-  Awarded the SNQ (Symbol of National Quality) - Nutritional Health Food Category / Special Functional Health Ingredients Group - Grape King Hericium erinaceus mycelium powder
-  Received 2024 Hsinchu Science Park R&D Accomplishment Award and Innovative Product Award
-  Received a subsidy of NT\$4.33 million from the National Science and Technology Council's Science Park for the project titled "Cognitive behavioral study and neural structural function analysis in post-stroke treatment with Erinacine A--Preclinical research project."

R&D Award Highlights for 2024 Were as Follows:

Invention awards received in 2024			
Item	Event	Patents	Awards
1	Russian Archimedes International Invention Exhibition	Mycelium of filamentous fungus and its manufacturing method	Gold medal / Special award
2		Use of mycelium of <i>Phellinus linteus</i> GKPI for preparing composition of improving obesity and obesity-related metabolic disorders	Gold medal
3	Malaysia Technology Expo	Mycelium of filamentous fungus and its manufacturing method	Silver medal
4		<i>Bifidobacterium lactis</i> GKK2, composition containing the same and use thereof for improving allergic asthma	Gold medal
5	International Invention, Innovation & Technology Exhibition (ITEX) in Malaysia	Use of mycelium of <i>Phellinus linteus</i> GKPI for preparing composition of improving obesity and obesity-related metabolic disorders	Gold medal
6		<i>Lactobacillus fermentum</i> GKF3, composition containing the same and its use for improving psychotaxia	Gold medal / Special award
7	European Exhibition of Creativity and Innovation	Wound external composition containing lactic acid bacteria fermentation product and use thereof (M3)	Gold medal / Special award
8		<i>Lactobacillus fermentum</i> GKF3, composition containing the same and its use for improving psychotaxia	Gold medal / Special award
9	World Genius Convention and Education Expo in Tokyo	Wound external composition containing lactic acid bacteria fermentation product and use thereof (M3)	Gold medal
10		Use of <i>Pediococcus pentosaceus</i> GKP4 for preparing oral composition of improving sarcopenia	Gold medal / Special award
11	Geneva International Exhibition of Inventions	Wound external composition containing lactic acid bacteria fermentation product and use thereof (M3)	Gold medal / Special award
12		Use of <i>Phellinus linteus</i> for preparing compositions for improving sarcopenia	Gold medal / Special award
13	International Invention & Innovation Expo in Shanghai	An active substance of <i>Bifidobacterium lactis</i> GKK2, a composition comprising thereof and its use for promoting longevity	Gold medal
14		Use of manufacturing a composition for improving the immunity	Gold medal / Special award
15		A <i>Lactobacillus rhamnosus</i> GKL1, a composition and its use for improving alcoholic injury in liver, stomach and/or intestine	Gold medal
16	INNOVERSE Invention & Innovation Expo in the USA	Wound external composition containing lactic acid bacteria fermentation product and use thereof	Gold medal / Special award
17		<i>Bifidobacterium lactis</i> GKK2, composition containing the same and use thereof for improving allergic asthma	Gold medal / Special award
18	10th World Invention and Innovation Contest in Korea (WIC)	Use of preparing a pharmaceutical composition for improving myelination of central nervous system by <i>Hericium erinaceus</i> mycelia extract	Gold medal
19		An active substance of <i>Lactobacillus paracasei</i> GKS6, a composition comprising thereof and its use for promoting longevity	Gold medal

20	All American DAVINCI International Innovation and Invention Expo	An active substance of <i>Bifidobacterium lactis</i> GKK2, a composition comprising thereof and its use for promoting longevity	Gold medal / Special award
21		An active substance for the treatment of dementia, its preparation methods, pharmaceutical combination comprising thereof, and the preparation methods of the pharmaceutical combination	Gold medal
22	International Invention Innovation Competition in Canada (ICAN)	Use of <i>Cordyceps cicadae</i> mycelia active substance for manufacturing the composition for preventing, postponing or curing changes in the anterior/posterior chamber volume, vitreous humour, and/or retinal detachment	Gold medal / Special award
23		Wound external composition containing lactic acid bacteria fermentation product and use thereof	Gold medal / Special award
24	International Invention and Trade Expo in London	Use of <i>Lactobacillus plantarum</i> GKD7 for manufacturing composition of improving osteoarthritis and degenerative joint disease	Gold medal / Special award
25		Wound external composition containing lactic acid bacteria fermentation product and use thereof	Gold medal
26	International Innovation and Invention Competition (15th IICC)	Use of <i>Phellinus linteus</i> for preparing compositions for improving sarcopenia	Gold medal
27		Mycelium of filamentous fungus and its manufacturing method	Gold medal
28		Use of <i>Cordyceps cicadae</i> active substance for improving visual acuity	Gold medal
29	20th International Salon of Inventions and New Technologies	Wound external composition containing lactic acid bacteria fermentation product and use thereof	Gold medal
30		<i>Bifidobacterium lactis</i> GKK2, composition containing the same and use thereof for improving allergic asthma	Gold medal
31	18th International Warsaw Invention Show (IWIS)	The use of probiotics for preparing oral compositions to improve sarcopenia	Gold medal / Special award
32		Use of <i>Lactobacillus plantarum</i> GKD7 for manufacturing composition of improving osteoarthritis and degenerative joint disease	Gold medal
33	International Invention Show (INOVA in Croatia)	Use of <i>Phellinus linteus</i> for preparing compositions for improving sarcopenia	Gold medal / Special award
34		An active substance of <i>Bifidobacterium lactis</i> GKK2, a composition comprising thereof and its use for promoting longevity	Gold medal / Special award
35	11th Hong Kong IIDC International Invention and Design Competition	Wound external composition containing lactic acid bacteria fermentation product and use thereof	Gold medal
36		Use of <i>Phellinus linteus</i> for preparing compositions for improving sarcopenia	Gold medal
37	Seoul International Invention Fair (SIIF)	Use of <i>Phellinus linteus</i> for preparing composition of improving sarcopenia	Silver medal
38		Solid-state cosmetic composition and its manufacturing method	Special award
39		Wound external composition containing lactic acid bacteria fermentation product	Bronze medal

3.1.1 Sustained Growth of Material Development Capabilities

1. Grape King Biotech Research Institute (Longtan Branch)

Our Bioengineering Center was established in 1991 and was upgraded to a “Biotech Research Institute” in 2019 with an investment of NT\$1.6 billion. The Biotech Research Institute is responsible for developing materials and product production. In terms of R&D, the Biotech Research Institute is responsible for developing and applying our self-developed materials (key components) and actively collaborates with domestic academic and research institutes to develop products, verify product efficacy, and improve processes so as to establish core technologies for our company.

Our domestic and overseas collaboration projects and patents obtained in 2024 include:

- There are around 17 industry-academia collaboration projects with the Ministry of Science and Technology, the Council of Agriculture, the Ministry of Education, and various colleges and universities, bringing the total to 225 projects.
- We currently hold 225 patents; we applied for 44 patents in 2024 and received approval for 24.

Patents received in 2024

	Title of Patent	Country	Patent number
1	Use of Lactobacillus fermentum GKF3 for preparing oral composition of reducing tobacco addiction	Taiwan	I837529
2	METHOD FOR IMPROVING SARCOPENIA BY USING PHELLINUS LINTEUS	United States	11,944,659
3	Composition for preventing and/or improving oral submucosal fibrosis and the use thereof	Taiwan	I838163
4	A composition containing Lactobacillus spp. and its use for preventing and/or improving anti-aging of skin	China	ZL 202110244793.1
5	Use of Hericium erinaceus mycelia active substance for preventing or curing retinopathy	China	ZL 202111561046.7
6	Composition for inhibiting peri-implantitis and use thereof	Taiwan	I842366
7	Phellinus linteus mycelia, method of manufacturing its extract concentrate, and use of the same for preparing composition of improving sleep	China	ZL202110244975.9
8	Lactobacillus plantarum, fermented product, method of manufacturing the same, composition including the same and its use for manufacturing composition of enhancing sperm quality under a heat stress	Taiwan	I846368

9	Use of Lactobacillus plantarum GKD7 for manufacturing composition of improving osteoarthritis and degenerative joint disease	Taiwan	I846367
10	Use of Phellinus linteus for preparing compositions for improving sarcopenia	China	ZL 202110225797.5
11	Use of manufacturing composition of Pediococcus acidilactici GKA4 for preventing and treating the renal function impairment	Taiwan	I849717
12	Use of extract of Phellinus linteus GKPI for preparing composition of enhancing glycogen amount after exercise training and reducing blood urea nitrogen amount after exercising	Taiwan	I851117
13	Use of mycelium of Phellinus linteus GKPI for preparing composition of improving obesity	China	ZL202111496398.2
14	USE OF PEDIOCOCCUS PENTOSACEUS GKP4 FOR PREPARING ORAL COMPOSITION OF IMPROVING SARCOPENIA	Singapore	10202114088U
15	Use of manufacturing composition of Pediococcus acidilactici GKA4 for preventing and treating the renal function impairment	Japan	7553634
16	Use of Clostridium butyricum GKB7 for manufacturing composition of improving osteoarthritis and degenerative joint disease	Taiwan	I860688
17	Probiotic composition for improving sleep quality and use thereof	Taiwan	I861750
18	USE OF LACTOBACILLUS FERMENTUM GKF3 FOR PREPARING ORAL COMPOSITION OF REDUCING TOBACCO ADDICTION	South Korea	10-2726654
19	MYCELIUM FOR FILAMENTOUS FUNGI AND METHOD OF MANUFACTURING THE SAME	Taiwan	I864800
20	USE OF LACTOBACILLUS FERMENTATION PRODUCT IN PREPARATION OF EXTERNAL COMPOSITION FOR ENHANCING SKIN WOUND HEALING	China	ZL 202011267520.0
21	Use of Hericium erinaceus mycelia active substance for repairing optic nerve	Taiwan	I867935
22	USE OF LACTOBACILLUS PLANTARUM GKD7 FOR MANUFACTURING COMPOSITION OF IMPROVING OSTEOARTHRITIS AND DEGENERATIVE JOINT DISEASE	Japan	7601959
23	USE OF HERICIUM ERINACEUS MYCELIA ACTIVE SUBSTANCE FOR PREVENTING OR CURING RETINOPATHY	Malaysia	MY-205870-A
24	USE OF CLOSTRIDIUM BUTYRICUM GKB7 FOR MANUFACTURING COMPOSITION OF IMPROVING OSTEOARTHRITIS AND DEGENERATIVE JOINT DISEASE	Japan	7607709

Brand-new fermentation production lines were established in the Grape King Bio Park in 2024. Grape King Bio currently has six 1-ton, one 2-ton, one 3-ton, five 5-ton, one 10-ton, two 15-ton, six 20-ton, six 40-ton, and one 50-ton large-scale fermentation tanks as well as over eighty 100-liter small-scale fermentation tanks. The fermentation capacity over the whole Group has reached 506 tons, the largest capacity seen in the domestic health food manufacturing industry. We implemented automated freeze-drying processes to reduce pollution rates and maintain stable quality. Our downstream production equipment include membrane coating machines, freeze-drying machines, centrifuge machines, low temperature continuous flow drying machines, and filter press machines, which make raw materials for health foods used by Grape King Bio, Pro-Partner, our Shanghai company, and other OEM manufacturers.

Our Biotech Research Institute has extensive experience in fungal fermentation and the largest organizational fermentation production capacity (506 tons) in Taiwan. We combined several dozen patented production technologies with exclusive materials and procured raw materials to develop unique formulations. Apart from classic products such as Ganoderma King, Antrodia King, and Probiotic King, we also developed new products such as Kombucha Double Fiber Drink, Bio Marigold Lutein Extract Jelly, Slim Turmeric Complex EX, PowerBOMB Energy Drink, which are popular with the public.

Additionally, many of our developed products have received acclaim, including the Grape King Bio LGG Probiotics, Ganoderma King, Antrodia King, Proteck Stomaker, Ling Zhi Anti-Allergy, Golden Comebest Energy Drink, Slim Probiotics King EX and Probiotics King Power; these eight products have received health food permits.

2. Development and Patenting of Key Materials

Developing ingredients for health and beauty products is one of the main focuses of the R&D team at Grape King Bio. We have developed the following materials:

Cordyceps cicadae mycelium
Protect renal functions and prevents dry eye syndrome

Hericium erinaceus mycelium
Rich in Erinacine A, which can trigger the generation of nerve growth factor (NGF) in glial cells

Tiger milk mushroom (Lignosus rhinoceros), Malaysia's national treasure
Prevent asthma

Lepista nuda mycelium
Produces antioxidant Ergothioneine

Grape King Bio continues to conduct analyses and tests regarding the efficacy of our developed materials:

✓ Screening of lactic acid bacteria strains for muscle gain and fat loss, aging delay, antiviral effects, fertility function improvement, addiction reduction, and depression prevention.

✓ Analysis of Cordyceps cicadae mechanisms for reducing intraocular pressure, fighting kidney damage, and alleviating allergy effects.

✓ Analysis and research of Hericium erinaceus properties for the prevention of premenstrual syndrome, neural damage regeneration, anti-inflammation functions, improvement of depression and sleep, prevention of degenerative joint diseases, and protection against brain ischemia.

✓ Application and Promotion of Fungal Alternative Protein Materials.

✓ Clinical Trials on osteoarthritis with Clostridium butyricum Material.

In 2025, we will researched and upgraded four major technologies, apply new technologies to R&D of new formulations, and develop different product formulations to meet various customer demands, including:

- 1 Soft capsules
- 2 Jellies
- 3 Super mixer granulation (SMG)
- 4 Fluid bed granulation

Our Biotech Research Institute also accepts OEM and ODM requests, including work on:

- 1 Fungi materials (such as *Ganoderma lucidum*, *Agaricus blazei*, *Antrodia cinnamomea*, *Cordyceps sinensis*, *Coriolus versicolor*, and others)
- 2 Probiotics (such as cocci, bacilli, bifidobacterium, saccharomyces, and clostridium)
- 3 Other edible microbes, enzymes, and metabolites

Note: For more information on our patents, please refer to our company website: <https://www.grapeking.com/tw/rd/patent-paper/patent>

3.1.2 Product Development and Customized Services

Along with the rise of civilization diseases, low birth rates, and other social trends, demographic structures are gradually moving to middle-aged and aged societies. Consumers are becoming more health aware, and pay more attention to food characteristics and health impacts. Therefore, nutritional content and functionality have also become relatively more important. Grape King Bio established an Innovation and Research Center (IRC) in 2016, gathering together elites from the product development, product planning, material development, quality control, and Quality Assurance Departments. The IRC uses specialized fermentation technologies developed by the Biotech Research Center and assesses differentiated ingredients and raw materials from external sources to develop unique formulations in hopes of developing delicious and functional health foods so that customers can replenish nutrients and consume ingredients with specific functions by eating health foods.

Additionally, the Grape King online store has established a customer service center which compiles consumer feedback through phone or email, big data analysis, and information from market research companies. We also receive information on market needs through our marketing channels and distributors. For example, for products currently in development, we identify appropriate product types, specifications, and marketing strategies through actual market information provided by distributors, so that our products can better align with market needs.

IRC Internal R&D Team and Responsibilities

- | | | |
|--|---|--|
| 1. Development of brand and OEM products | 5. Application for health food certifications and SNQ (Symbol of National Quality) certifications | 7. Formulation of specifications for raw materials and finished products |
| 2. Development of analytical methods | 6. Product efficacy trials (animal and human trials are outsourced) and stability trials | 8. Product maintenance and raw material inventory management |
| 3. Production trial runs for new products | | |
| 4. Research on dosage forms and new technologies | | |

1. Development of Physical Products

We launched our “new dosage form development” services in 2017. Development of new dosage forms is not limited to the production machines currently in factories, and largely include: the dropping pill category, the jelly (gel) category, the soft capsule category, the tablet (double-layer and chewable) category, and the household goods (shampoo and soap) category. Our R&D team utilizes the fermentation technologies at our Biotech Research Institute to satisfy the demands of different customer groups and nutritional needs as “A health expert for the entire family.” Our products can be divided into 8 main categories. We developed a total of 277 products in 2024.

Product	Chinese Herbal Range	Health Maintenance Range	Female Beauty Range	Energy Drink Range	Special Health Care	Pet Foods	Traditional Foods	Jellies
Description	We use Chinese herbal formulations and our professional capabilities in fungal fermentation to develop comprehensive maintenance products for our consumers.	These products maintain normal physiological functions and help to satisfy the requirements of different age groups and nutritional needs, such as for gastrointestinal systems, bones and joints, vision, and cardiovascular health, which are all popular needs. Our lactic acid products are also suitable for customers of all ages.	All women naturally strive to be beautiful, and how to simply and quickly obtain necessary nutrients as part of a busy lifestyle is an issue that concerns all female consumers.	“Drink up ComeBest!” is a classic advertising slogan at Grape King Bio. This range of energy drinks can help to replenish energy and comes in multiple flavors.	Dietary imbalances are a part of modern lifestyles. Many people consume high-calorie foods but still feel hungry. We therefore provide nutrients that cater to customer needs, such as increasing satiety.	Grape King Bio is adapting to the vast pet market and has developed pet health, beauty, and health food products to take good care of these cuddly pets.	We incorporated functional ingredients into everyday food products to address consumers' dietary needs and enhance their daily intake frequency.	In response to the trend of leisure-oriented health food products, we developed functional health products in the form of convenient and enjoyable jellies, which are popular among consumers and suitable for all ages.
Product Examples	Grape King Bio Double Effect Antrodia King Grape King Bio Double Effect Ganoderma King Hirsutella Sinensis Capsules	Probiotics (Granule) Probiotics (Capsule) Carb Controller Fish Oil Soft Capsules	Collagen Probiotic Powder Collagen Skin Brightening Powder Whitening Capsules	Lutein Drink Grape King Bio Kombucha Double Fiber Drink Aphrodisiac Drink Drainage and Sodium Removal Drink	Sleep Capsules Calcium Powder Cellulite Reduction Capsules Clostridium Butyricum Capsules Aphrodisiac Capsules Weight Loss Probiotic NMN	Cat (Health Powder) Dog (Health Powder) Dog (Eye Health Powder)	Coriolus Versicolor Noodles with Future Meat Sauce Plant-Based Meat Strips Chicken Essence	Vitamin & Mineral Jelly Move Jelly Lutein Jelly
New products developed in 2024	15	67	13	53	116	5	3	8

In 2024, Grape King Bio not only conducted routine product development processes, but also developed products along two main focuses:

- (1) Technical improvements for existing products;
- (2) Proposals for new products and development of samples for new dosage forms

In 2024, we proposed new products to maintain the momentum from the previous year, with the Innovation Research Center collaborating with the Marketing and Planning Department on product conceptualization and development. This integration allowed products to address both marketability and efficacy, catering better to the diverse needs of modern customers.

Our product developments are customized for client needs. If clients wish to develop products aligned with market needs, we fully collaborate with them on design and production. We currently do not prohibit use of GMO materials in our products, but select specific materials if requested to do so by our clients. With regard to documentation and certification, we provide raw material supplier inspection documents to prove that we use no GMO raw materials.

2. Cross-Industry Collaborations

We formed a strategic partnership with the Uni-President Group and expanded our domestic and overseas channels, officially bringing our healthy snack foods to the mass market. We utilized Uni-President's expertise in FMCG foods to refine our food safety structures and systems.

3. Online Channels

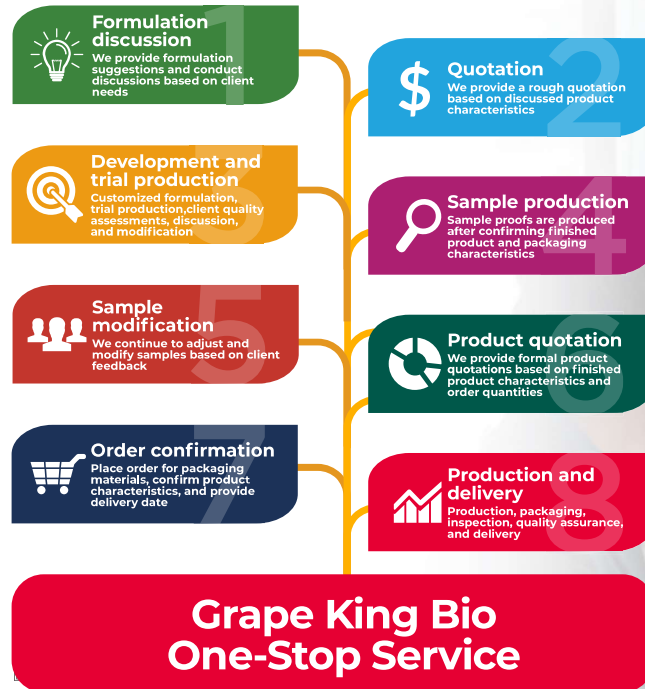
Our direct sales online platform provided contact-free shopping opportunities online during the pandemic. In future, we plan to provide comprehensive and professional health suggestions, gradually strengthen our relationship with our members, and work to become an all-round health care expert.

4. Customized Formulation Designs and OEM Services

Apart from developing our own products, our product development team provides comprehensive ODM/OEM services and can customize products and formulations to fit client requirements. We can provide tailored and innovative formulations in a wide range of dosage forms and supply customized and innovative products to our clients. Apart from domestic channels, we have also begun to actively develop overseas markets in recent years. Our ODM/OEM services provide a variety of product formulations and packaging, including glass bottles, PKL combibloc/aluminum drinks packaging, aluminum packaging (flake, powder, and granule), capsules, and pouches (liquid formulations and jelly drinks).

One-Stop Service Platform

Grape King Bio has established a one-stop service OEM platform which provides integrated services from importing of upstream patented raw materials, cross-category production lines, and back-end packaging of finished products. We provide OEM services for many products such as health foods, beauty drinks, functional drinks, and PKL aluminum foil-packaged beverages.



Professional Consulting Services

Our R&D team provide professional guidance on raw materials and products based on client market plans and product needs. We also provide our clients with timely after-sales consulting service such as guidance on product health and nutritional information and guidance on relevant documentation for client health food products.

3.2 Industry-Academia Collaboration

We work closely with schools. In terms of professional technologies, we have a long development history and advanced technologies, making us a key target for industry-academia collaborations. We continue to build connections and work on projects with schools, participate in various speeches and academic presentations, and also provide product testing services.

Over the past three years, our factories have hosted 78 visits for 2,986 people. We hope our efforts can bridge industrial-academic technological gaps, develop innovative technologies, and cultivate key talents for the future.

1. Invested in industry-academia research collaborations, working with colleges and universities

Grape King Bio actively promotes industry-academia collaborations and links new products with professional research of professors from universities and colleges around Taiwan so as to enhance our R&D momentum, verify product efficacy, speed industrial upgrading, and accelerate commercialization and marketization of university research.

2. Obtained biotech industry projects

Grape King Bio has made great contributions in furthering development of the national biotechnology industry. The Executive Yuan Ministry of Economic Affairs guides the industry by accepting applications for several large-scale projects each year. Over the past ten years, Grape King Bio has applied for and completed a total of 11 projects, working with many science and technology colleges to jointly develop many new products and conduct efficacy tests. Total investments amounted to NT\$146 million, and our projects have yielded fruitful results. In addition to supporting the Ministry of Education's talent training programs, we also provide internship opportunities and industry teachers who lecture and serve as visiting directors for various schools. We review various projects for the Ministry of Science



and Technology, were invited to present speeches and serve as an evaluation committee member for the Ministry of Economic Affairs, actively supporting these governmental institutes and promoting industry-academia-government exchanges and collaborations.

In 2024, we received a subsidy of NT\$11.2 million from the Technology Development Program by the Ministry of Economic Affairs, and our research focuses on the development of high-fiber, high-protein fungal-based meat alternative using mycoprotein produced by *Fusarium venenatum* PTA-2684. We have achieved that our strain incubation capabilities and production technology are both the first of their kind in Taiwan. With 30 years of extensive fermentation technology and experience, we fully integrate resources from industry, government, academia, and research institutes to jointly develop various types of diversified foods with wide applications through this research project. This aims to drive a new wave of mycoprotein utilization, thereby reducing greenhouse gas emissions and achieving an eco-friendly and healthy lifestyle.

3. Academic speeches and academic works

The R&D Department at Grape King Bio has been invited to speak at industrial, government, and academic institutes. We have provided lectures at more than 100 college departments to share and exchange our more than 20 years of experiences relating to biotechnology and industry development. Over the past three years, we were invited to present 130 lectures at colleges and universities, participated in oral examinations of more than 100 graduate and doctoral dissertations, participated in curriculum planning or departmental development of more than 10 university departments, and evaluated more than 10 university departments. We also publish our research results in journals or at conferences. In 2024, we published 29 journal papers, 32 conference papers, and 23 conference posters.



4. Provided product testing services

We are renowned for our fermentation technologies, and have 89 fermentation tanks in our factories. Apart from supplying key raw materials, we also provide fermentation testing and commercial production platform services to external academic and industrial institutes, which enable us to study different microorganisms, strengthen our research, and build our expertise while assessing appropriate materials for technological transfers. We work with more than 20 college departments, accelerate industry-academia collaborations, and speed industrialization and mass production of academic achievements to enhance our international competitiveness.



3.3 Customer Service

General manager of Business
Division and Shanghai
subsidiary
Yuan-Tsung Lin



Customer service is an important element for building good relationships with customers. We listen to customer feedback and take action to improve our products and services.

Management Approach	Key issue-Customer service	
Policies	Use data integration and analytics through the established Customer Data Platform (CDP) database, the support of the CTI call management system and complete personnel training to fulfill customer expectations, build customer loyalty through professional services, and enhance customer satisfaction as our customer numbers continue to grow.	
Commitments	Create satisfying and recommendable consumer journeys by providing customer service experiences that combine attentive service, professional expertise, and comprehensive systems, all of which prioritize meeting customer needs and resolving their issues.	
Targets	Short-term	<ol style="list-style-type: none"> 1. Regularly assess relevant indicators through satisfaction surveys to increase “complete satisfaction” rates. Our customer service staff participate in training organized by professional institutes each year and obtain related certificates. 2. Conduct product refresher training courses led by professional nutritionists to enhance product expertise. 3. Establish a database of frequently asked questions related to quality issues to ensure consistency and accuracy in service quality. 4. Establish a new Customer Data Platform (CDP) database to analyze, track, and manage customer interactions and integrate data to greatly strengthen marketing efficiency and customer service.
	Mid-term	<ol style="list-style-type: none"> 1. Continually conduct product refresher training courses led by professional nutritionists to enhance product expertise. 2. Continuously optimize a database of frequently asked questions related to customer service quality to ensure consistency and enhance customer trust in our quality. 3. Enhance customer satisfaction successfully through the utilization of the Customer Data Platform (CDP), which can predict potential issues and concerns that customers may have with purchased products or services. Proactively address these concerns and provide customers with the necessary resources to increase their satisfaction.
	Long-term	Establish a complete customer service and nutritionist team to respond to customer service queries and provide comprehensive health, diet, and lifestyle recommendations.
Responsibilities	Related internal collaboration units: Legal Office, Quality Assurance Department, Marketing Section, and Finished Products Section.	
Resources	Invested in personnel training courses (including external customer service training courses and internal product refresher courses) and use our CDP system for customer management and management of support quality. Our systems allow us to compile comprehensive records on customer journeys, customer contacts, and product quality, all optimized by AI, thereby enhancing customer service experiences and satisfaction.	
Specific performance	<ul style="list-style-type: none"> • Continuously improved the satisfaction rates for customer service hotline respondents and discussed solutions for optimizing cases with low satisfaction rates to enhance customer service quality. • Implemented the new Customer Data Platform (CDP) database in 2024 and completed the systems for marketing automation and digital member binding to significantly enhance customer service through this data integration. • Implemented and established ESG-compliant recycled boxes in Grape King online store in 2024; adopted these recycled boxes for shipments with specific specifications to enhance our adoption rate, strengthen our ESG commitment, ultimately boosting customer recognition of the brand's ESG values, although the cost per recycled box is 2 to 3 times higher than that of the original single-use cartons. • Continuously enhanced our management and security of customer personal data and implemented a new system in 2024 that automatically encrypts and reviews outgoing emails containing consumer personal data, blocking those that are flagged. This measure ensures that customer data is strictly used within our company, safeguarding its protection and preventing any harm to customer interests due to improper data use during transmission or human error. 	

3.3.1 Innovative Marketing Strategies

1. Our resurgence: Advancing the legacy of health expertise

In 2024, our star products continue to set new records!

The classic product, Probiotics King, has launched its upgraded version, “Probiotics King Flagship EX 400.” With the strong endorsement from renowned table tennis player Chuang Chih-Yuan, it is set to lead a new wave in the probiotics market.

Meanwhile, our Antrodia King reigns as 2024's top-selling health supplement with 13.37% growth, cementing its billion-dollar market dominance with unstoppable momentum.

Siliim Probiotics King EX has also expanded its customer base through consistent exposure, with a new customer growth rate of 8%, demonstrating its strong market appeal.

Additionally, to celebrate our 55th anniversary, we launched a co-branded series with the wildly popular IP Fat Tiger, generating NT\$33 million in revenue, once again proving our brand's appeal and market influence.

2. Drink with attitude: Elevating brand value to new heights

Our beverage lineup continues to drive market momentum!

The collaboration between our Kombucha Double Fiber Drink and Taiwan's hottest IP LAIMO has further expanded brand recognition, successfully fostering intergenerational engagement and gaining widespread among consumers of all ages and genders, demonstrating the brand's strong influence.

Meanwhile, our functional energy drink PowerBOMB has refined its brand positioning by embedding itself in hip-hop and urban culture, cultivating a loyal fanbase. Despite price increases, sales have continued to grow steadily by 6%, reflecting the brand's strong appeal.

Our Comebest series has also demonstrated remarkable growth. The newly launched “Comebest 200P EX Drink” has driven a remarkable 77% sales growth for Comebest 200P, showcasing its formidable market competitiveness.

3. Comprehensive packaging upgrade for a green future

In 2024, we launched a packaging upgrade initiative aimed not only at refreshing our visual identity with a more youthful appeal but also at adopting eco-friendly, lightweight materials to significantly reduce plastic usage, in compliance with stringent standards of the European Union.

Additionally, we actively collaborate with low-carbon emission suppliers to integrate sustainable practices throughout our production processes.

In support of the circular economy, our e-commerce platform has fully implemented recycled boxes and reusable packaging, transitioning from single-use to multiple-use solutions. While minimizing resource waste, this initiative also creates job opportunities for local disadvantaged communities, contributing to society.

4. Big data-powered transformation for precision decision-making

By implementing a Customer Data Platform (CDP), we have successfully established a comprehensive member database and implemented membership segmentation, enabling more precise and effective communication.

Through the 360-degree customer profile analysis within the system, we can instantly understand customer needs, quickly identify potential issues, and provide more personalized services.

This not only enhances customer satisfaction but also creates more marketing opportunities, effectively expanding our membership base.

Grape King Bio helps customers build a better future using our core mission of “Technology, Health, Hope” Our customer service management targets were divided into two main categories:

1. Establish a customer-oriented business philosophy: Move from product management to customer management, and from transaction management to relationship management. Customer needs, purchasing behaviors, and potential consumption preferences are all precious resources. Therefore, we actively collect comprehensive data from our interactions with consumers to build the core functions required for customer management, and continue to review customer satisfaction indicators and optimize our business processes. Our quantitative and qualitative customer interviews help us to collect customer feedback, which we use to make adjustments.

2. Accelerate customer service innovations: We adopt a customer-oriented service concept which not only focuses on customer satisfaction and loyalty enhancement, but also responds to changes in customer needs, including through an increasing number of LINE groups, online responses, and communication management. We continue to incorporate new systems and new service functions to facilitate ease of use and convenient communication and interaction with our customers.

Customer satisfaction has increased year by year, reaching 93% in 2024 as very satisfied!

Investment highlights for 2024:

We now have more than 180,000 members and continue to enhance customer satisfaction over four aspects, including by continually organizing product training hosted by nutritionists to enhance our professionalism and quality. We also established a frequently asked question database and standard operating procedures in response to customer complaints, which enabled us to effectively categorize customer complaints and optimize response guidelines related to common issues, thereby reducing the number of complaints that escalated to serious problems, and enhancing the professionalism of frontline customer service personnel. Additionally, our satisfaction surveys found that more than 90% of customers were satisfied with our services. For the few dissatisfied customers, we carefully listen to their phone feedback and discuss improvements based on their concerns.

In addition to continuously reducing the number of complaints from customer calls in 2024 (a decrease of 16% in complaints from customer calls in 2023, totaling a reduction of over 1,800 calls annually), there was a simultaneous increase in the number of satisfaction surveys conducted (the completion rate of satisfaction surveys for customer calls in 2024 saw a 10% increase) and an improvement in satisfaction rates (an increase of 5% in satisfaction levels in 2023). Furthermore, we established the Customer Data Platform (CDP), integrating 360-degree customer data and relevant interest information to enhance understanding of customers and provide more comprehensive customer service.

Results of Customer Satisfaction Surveys

Category	2022 年	2023 年	2024 年
Very Satisfied	60%	72%	93%
Satisfied	34%	27%	7%
Acceptable	5%	1%	0%
Not Satisfied	1%	0%	0%
Very Dissatisfied	0%	0%	0%

Note 1: Satisfaction and dissatisfaction inquiries were conducted for approximately 2,364 incoming customer service clients in 2024, with satisfaction estimates based on these responses.



3.3.2 Customer Service Processes

Customer service handling processes at Grape King Bio is categorized as either general queries or customer complaints. We have established dedicated units to support the handling of customer service processes, ensuring that customer feedback can be delivered and resolved in a timely and comprehensive manner.

1. **General queries:** We provide product consultation services to offer immediate response to consumer queries.

2. **Customer complaints:** Customer complaints tend to be complex and require professional handling expertise as well as communication and verification of information between departments. In 2022, Grape King Bio adopted a policy to provide progress reports within 4 hours and resolve complaint cases within 24 hours. For complaints involving tests or other complex services, responses are provided at an agreed-upon time. This process ensures that customer complaints can be handled in a timely manner.

Our digital channels include email, Facebook messages, and LINE@ messages. Other responses were provided through general calls

Responsible Unit	Consumer calls	Consumer service center	Sales & Marketing Division	Quality assurance/R&D	Responsible unit	Sales/finances	Distribution center
Responsible personnel		<ul style="list-style-type: none"> Customer service hotline personnel Professional nutritionists 	<ul style="list-style-type: none"> Product managers Channel managers Channel personnel 	<ul style="list-style-type: none"> Quality assurance contact Quality assurance inspector Quality assurance section chief 	<ul style="list-style-type: none"> Reviewer Unit manager 	Unit personnel	Unit personnel
Handling unit	<ul style="list-style-type: none"> Product queries Activity queries Product orders 	<ul style="list-style-type: none"> Accept customer calls Record basic consumer information 	Product ordering procedures			Invoice creation	Shipping
Items	Complaints and grievances	<ul style="list-style-type: none"> Accept preliminary customer calls Record basic consumer information Register complaints Provide immediate resolutions to customer complaints 					
		<ul style="list-style-type: none"> Composition problems Appeals are filed when issues cannot be resolved 	<ul style="list-style-type: none"> Accept notifications Customer complaint system processes 	<ul style="list-style-type: none"> Receipt Quality inspections for customer complaints Confirm inspection details and resolutions 	<ul style="list-style-type: none"> Tracking of sample quality Tracking of complaints 	<ul style="list-style-type: none"> Returns and refunds Discounts 	Tallying/receipts and returns
Conclude cases		<ul style="list-style-type: none"> Respond to consumers Close cases 	Respond to customer service personnel	<ul style="list-style-type: none"> Investigation of administrative documents Verification form for quality abnormalities Investigation reports Respond to manager of business department 	<ul style="list-style-type: none"> Review incident context Formulate countermeasures Track improvements Confirm countermeasures Implementation results 	<ul style="list-style-type: none"> Notify unit personnel Notify sales units to rescind invoices 	<ul style="list-style-type: none"> Notify unit personnel at the first instance after receiving returned products

In 2024, the number of customer complaints we received continued to decrease. The primary complaints included issues related to logistics and delivery, as well as the quality of gifts, and the remaining complaints mostly related to queries regarding product use. This year, we continued to uphold our customer-first principles and maintain smooth communications using a professional and positive attitude to handle customer feedback to ensure that customer complaints can be effectively resolved. We also conduct comprehensive reviews of manufacturing and quality control processes based on customer-reported issues to reduce similar complaints in the future.

Due to increasing awareness of personal data protection, we are receiving more and more customer complaints related to personal data usage. We have optimized and integrated our standard operating procedures into the Customer Data Platform (CDP) to immediately halt personal data usage upon customer requests for cessation, effectively preventing repeated customer complaints in 2024.

3.3.3 Listening to Customer Opinions

Our short-to-medium term service policies are as follows:

1. Strengthen customer service skills, training, and professional certifications
2. Review all points of contact, including by establishing standard procedures for categorizing customer complaints and a database of common customer complaints. We have implemented comprehensive satisfaction surveys and will continue to improve customer interactions by establishing a professional and sound customer management team over the long term, as well as use data analytics and a professional nutrition team to provide better customer value in our customer management system.
3. Establish a professional and comprehensive customer management team in the long term, we aim to provide a sophisticated "customer value" management system through comprehensive data analysis and a professional nutrition team. We observed that our customers no longer differentiate between physical and virtual channels as they utilize multiple channels freely. Therefore, understanding customer characteristics and common problems faced by customers of physical channels may help to enhance our customer service quality. Additionally, social media marketing is still one of our main axes. We provide more highly interactive and interesting advertisements on social media in order to increase flexibility and create new shopping experiences for increasing customers' satisfaction.



3.3.4 Protection of Customer Privacy and Rights

Division director of
Management Division
Du-Sheng Wang



We will incorporate information security management mechanisms into the operating procedures of all departments and appropriately manage intellectual products generated by employees as well as confidential corporate information to establish a solid foundation for growth at Grape King Bio.

We protect the personal information of our customers and safeguard customer interests using the highest standards. In 2024, our ISO/IEC 27001:2013 certification continued to be valid and we have established an Information Security and Personal Information Management Committee. Our Chairman serves as the highest authority for the Committee, and senior executives from each department serve as committee members.

We have also established the following information security policies:

1	Information security is a key factor for achieving our operational targets. We need to maintain high levels of information security to ensure the confidentiality, integrity, and accessibility.
2	We strive to maintain consistency of information security measures in our operating environments while also balancing account security and information sharing.
3	Our information security management regulations are required to comply with governmental information security laws, regulations, and policy requirements.
4	All information procedures must ensure the security of corporate information to prevent leakage or loss of sensitive and confidential information.
5	We protect our information assets (including software, hardware, network communication facilities, and databases) and adopt appropriate backup and recovery facilities and procedures to prevent damage to information assets that could be caused by unauthorized actions or negligence. We also conduct periodic backup and recovery drills.
6	We have adopted appropriate information security management measures for all of our projects to ensure that related information is well-protected.
7	We conduct regular information security training to strengthen promotion of related policies.

Information Security Incident Classification

Incident Level	Degree of Impact	Incident Classification Definition	Reporting Period	Reporting Levels
Level 3	Major	One of the following conditions applies: • A major/emergency incident involving significant impact on privacy rights, or the breach of confidential or sensitive information of official affairs. • A major/emergency incident involving serious alteration of core business system or data. • A general security incident involving impact on core business operation or interruption of system, which cannot be recovered within the target recovery time.	24/7	Chairman, supervisors of executive units of the Information Security and Personal Data Management Committee, supervisors of dedicated units
Level 2	Notable	One of the following conditions applies: • A major/emergency incident not involving significant impact on privacy rights, or the breach of confidential or sensitive information of core business. • A major/emergency incident involving minor alteration of core business system or data. • A general security incident involving impact on core business operation or interruption of system, which can be recovered within the target recovery time.	24/7	Chairman, supervisors of executive units of the Information Security and Personal Data Management Committee, supervisors of dedicated units
Level 1	Minor	One of the following conditions applies: • A major/emergency incident involving only breach of non-core business information. • A major/emergency incident involving only alteration of non-core business system or data. • A general security incident involving only impact on or temporary interruption of non-core business operation.	24/7	Supervisors of executive units of the Information Security and Personal Data Management Committee, supervisors of dedicated units

No complaints concerning breaches of customer privacy and losses of customer data occurred in 2024. Other protection measures include the following:

1. Permission for use of personal information for our Grape King online store was upgraded so that all customers have to agree to relevant permissions before we can use their personal information. We use the most rigorous means to ensure that our customers can agree to and understand the regulations for subsequent use of personal information.
2. We prohibit our internal personnel from attaching files containing personal information to emails and instead apply restrictions on file access so that only authorized personnel can access folders containing personal information so as to strictly control the flow of personal information within our company.
3. We periodically change account information and passwords to improve login and access security.
4. Regularly send "IT Insights" emails to all employees to continuously promote information security concepts and strengthen advocacy to enhance employees' information security awareness.