

# The use of ORALPEACE at international space station officially announced and Space Cosme is launched And new Space Cosmetics are released



We hereby announce that “ORALPEACE,” a toothpaste/oral care product produced by TRIFE.Inc ORALPEACE Project (Minaminakadori, Nakaku, Yokohama, President Daisuke Teshima, Small and medium enterprise management consultant, <https://oralpeace.com/>), has been officially adopted to be used at the International Space Station.

ORALPEACE is an oral hygiene and moisturizer containing a patented formulation of lactic acid bacterium antibacterial peptide “Neonisin-e” developed from over 30 years of study of lactic acid by Kyushu University, which is safely digested and decomposed when swallowed, with excellent bactericidal effects at extremely low concentrations to bacteria causing oral troubles.

It was launched in Japan in 2013, and according to its characteristics, it is adopted in medical institutions and nursing care facilities throughout Japan to respond to needs in nursing settings. There are also demands from elderly people requiring nursing care who are unable to rinse mouth or spit, as well as babies, pregnant women, mothers during lactation, or dogs and cats. In addition, there is support for products with less environmental burden backed by the wealthy and health-oriented people who place importance on health, as well as mountaineering and camping, and the destination of exports from Japan is expanding to more than 15 countries across the world. In the ORALPEACE Project, we have been working on a nationwide job creation support program for people with disabilities through our business since 8 years ago as a bio/social venture that utilizes innovative technologies to support disadvantaged people.

The journey to the adoption by the International Space Station began when we faced an oral trouble of the founder’s father who struggled with late-stage cancer in 2012, thinking that we could develop toothpaste and oral care products containing a safe disinfectant that is safe to swallow, as well as toothpaste that can be used in space where water is precious.

Since 10 years ago, we have had a vision of using the product in space. In the last fiscal year, we applied for an open call for applications for space supplies by JAXA, and received scientific review, a fit check in space, etc. It was officially selected as a product to be used at the International Space Station, our dream became reality.

Another news is the announcement of our new product: "Space Cosmetics" that use space technology of the 21st century and solve skincare issues both in space and on Earth. (Note 1)

(Note 1)"Space Cosmetics facepeace" was not applied for or selected for the first public offering of daily necessities of JAXA in 2020. After a two years of research and development period from 2020, in 2022, as a commemorative project for the 10th anniversary of the project's founding, and as a space personal care product x social venture from Japan, chemical-free skin care with cutting-edge green technology, this will be our new challenge to social innovation in the world.

## Space Cosmetic Moisturizing Cream (Space Cosme) FACEPEACE

Skincare for humankind, created with the 21st century space technology for clear, hydrated, healthy and beautiful skin  
Chemical-free, plant-based, functional skincare (cream) containing "Neonisin-e®\*", which is kind to the body and the Earth



A skincare product made for all humankind using the 21st century space technology, "Space Cosme Facepeace" is gender and age neutral. Containing a patented formulation of lactic acid bacteria peptide "Neonisin-e®\*" (Patent No. 6523473), it is the world's first chemical-free (contains no chemical substances), plant-based (using 100% plant ingredients), and 100% biodegradable (all components will be decomposed in the natural environment or in the body) cosmetic item (cream) that is kind to the body and the Earth, and meets specifications for the use by astronauts (Note 2).

(Note 2): "Specifications for the use by astronauts " means our own standards and specifications that we have set ourselves after conducting our own research on space agencies around the world. It does not refer to the standards and specifications set by JAXA.

"Space Cosme" has been developed by applying the innovative technology of ORALPEACE to the field of skincare. When "ORALPEACE" was selected as a candidate product to be used at an international space station in 2020, we launched a development project for a personal care product for use in space. We started the research aiming to create a skincare product that is kind to the human body as well as the Earth, which can be brought into spacecraft and solve human skincare issues both in space and on the Earth. In 2021, we have successfully developed an innovative skincare product that can be used both in space and on the ground. A product made in Japan with internationally recognized quality, it has been inspired by the world's great outdoors that are reminiscent of space, and developed utilizing the Kyushu University's research results that have been adopted to be used at an international space station as the green technology of the 21st century. European certification for organic cosmetics is to be awarded. While civilian space travel is becoming a reality from 2022 onward and the environmental degradation more and more visible globally, we aim to contribute to humankind by utilizing the research results of Japan's national research institutes (Note 3), as well as by leading the world in commercially supplying "Space Cosme" made using innovative technology to help solving skincare issues of the 21st century.

(Note 3): "Japan's national research institute" refers specifically to Faculty of Agriculture in Graduate School at Kyushu University, Graduate School of Medical and Dental Sciences at Kagoshima University, and National Center for Geriatrics and Gerontology, and does not include JAXA.

Focusing initially on exporting and expanding in health and environmentally conscious overseas markets where civilian space travel plans are promoted ahead of the rest, we will launch the product in the USA and other international markets on February 24, 2022, at 10 am in Eastern Standard Time. It will be released in Japan on March 17, 2022, at 10 am in Japan Standard Time.

As with ORALPEACE, our preceding project, we will be distributing this product from Japan to people around the world, as a social business model showing how business can contribute to society.

For your loved ones. For the healthy and beautiful skin. To keep your skin clear and hydrated. For those who are hypersensitive to chemical compounds, have sensitive skin or skin problems, want to conserve nature and save the Earth for the future, are interested in skincare products utilizing the latest space technology. With love and sincerity, we will continue to conduct our research and business to bring skincare products wanted by humankind. We truly appreciate your support.



Plant-based, Chemical-free  
 Environment positive  
 functional skincare cream.  
 Contains "Neonisin-e®\*"  
 Created by Japanese biotechnology.





#### 4. Skincare made with plant-based ingredients that are essential for the skin

Sumptuous mixture of emollient ingredients (oil-based moisturizing ingredients) derived from various plants of the Earth and water-based moisturizing ingredients such as glycerin replenishes the skin with hydration, firms it up, and smoothens its texture, as well as protecting it from ultraviolet rays and dryness to keep it healthy. You can use it in addition to your current skincare favorites to boost their benefits.

#### 5. Concentrated and large-sized for long-term use

With the water content of less than 30%, Space Cosme's Compact and Rich formula is concentrated with carefully selected key ingredients. Like a beauty oil or serum, only a small amount is enough for each application. Though it depends on the amount each individual uses, the large-sized product (100 ml) should last for about a year when applied only to the face, making it suitable for long-term missions.

#### 6. A Japan-made product using space technology

A Japan-made product of world-class quality, which was inspired by the world's great outdoors that are reminiscent of space and developed using the advanced research results of Japan's national research institutes (Note 3) including Kyushu University. European certification for organic cosmetics is to be awarded.

#### 7. Products that are friendly to the natural environment of the Earth

Only using sustainable plant-based ingredients to suppress CO2 emissions and offset carbon, the product is highly biodegradable in the natural environment to ensure microbial ecosystems are protected in rivers. Designed for space missions, the container and packaging are light resistant, heat resistant, shatterproof, and made using environmentally friendly recycled glass. The container is designed to hold a large volume of the product to reduce the amount of packaging production as well as consumers' purchase frequency, which results in less environmental impact and household expenditure.

#### 8. Novel design for space missions

Designed by Noriteru Minesaki, a leading art director of Japan. In outer space with strong rays of light, black-printed letters let ultraviolet rays through and deteriorate the content. Therefore, only white letters are used on the silver-colored base that reflects light. Universal design that is easy to understand for all people around the world.

#### 9. For people around the world who share the same values

For clear, hydrated, healthy and beautiful skin. For those who would like to keep their skin clean, healthy and beautiful, conserve nature and save the Earth for the future. For the whole family from babies to the elderly and pets. For those who are interested in skincare products utilizing the latest space technology.



### **\*About “Neonisin-e®,” an original patented ingredient**

“Neonisin-e®” is a patented formulation of lactic acid bacterium antibacterial peptide (bacteriocin) which was invented in industry-academia collaboration of Faculty of Agriculture in Graduate School of Kyushu University, Graduate School of Medical and Dental Sciences of Kagoshima University, and National Center for Geriatrics and Gerontology. Their study is based on the technology research for lactic acid bacteria “to fight against bacteria by using bacteria” for more than 20 years by Professor Kenji Sonomoto, a doctor of engineering and honorary professor of Kyushu University, who held prominent positions such as a professor of Division of Systems Bioengineering, Department of Bioscience and Biotechnology, Faculty of Agriculture, Graduate School, Kyushu University, vice-president of Japan Society for Lactic Acid Bacteria, and president of the Society for Biotechnology, Japan.



It is produced from clean lactic acid bacteria which was discovered in plant-oriented food (protein) “soy pulp” made in Fukuoka prefecture. It is safely and rapidly degraded into amino acid while affecting indigenous bacteria on the human body (oral/skin) such as gram-positive bacteria, gram-negative bacteria and Candida bacteria that causes a wide range of troubles, and acting instantly at extremely low levels compared to general disinfectants and antibiotics. Also, innovative product preservation technology enabled us to achieve preservative-free products with no ethanol and synthetic preservatives. The major characteristic is: it is gentle to the body and also gentle to the environment.

In addition, thanks to its novel superiority that it acts only on bacteria and does not destroy human cells, it was expected to be applied to skincare and beauty fields such as an early cure of bedsores, treatment for acne, pimples, atopy, rough skin, bacterial skin troubles, body odor prevention and deodorant. (Patent No. 5750552)

### **Effective Ingredients in Japanese rice germ oil for the skin**

Rice germ oil is made by extracting the nutrients of rice germ which only about 50g can be collected from 5 kg of brown rice. It contains more ingredients required for skin such as  $\gamma$ -oryzanol, ferulic acid, tocotrienol, vitamin E and linolic acid, than other oils.



$\gamma$ -oryzanol and ferulic acid have been reported to have an effect of inhibiting the action of tyrosinase, an enzyme involved in the synthesis of melanin, and are also known to absorb UV rays on the skin surface and prevent sunburn. They are also expected to have a skin whitening effect.

Tocotrienol and vitamin E have the effect of protecting skin cells from active oxygen by strong antioxidative power. They are expected to prevent blemishes and freckles by inhibiting excessive production of melanin pigments caused by active oxygen.

It is said that aging progresses quickly in space, and the amount of moisture in the skin decreases with age. Ceramide in the cornified layer retains water. It is said that the moisture level can be retained by applying rice germ oil containing linolic acid, the same ingredient, to the skin.

### **\* Beauty ingredients in organic damask rose otto essential oil from Bulgaria**

Since ancient times, damask rose essential oil has been regarded as a precious perfume oil and been loved by humankind. Organic damask rose oil cultivated in the “Rose Valley” in Kazanlak (in the east of Sofia, the capital of Bulgaria) is considered to be a particularly valuable essential oil, whose Japanese market price is as high as 10,000 yen per mL. 4 tons of petals hand-picked in the early morning of June are required to obtain 1kg of the essential oil. Damask rose essential oil contains various beauty ingredients and aroma components such as geraniol, nerol, and phenyl that work on the mind and skin, as well as other components that work on the human body and hormones, whose mechanism of action is yet to be understood. Geraniol has antibacterial, insect repellent, astringent, and relaxing effects, and is believed to be effective for softening the skin and restoring its elasticity. Its scent is said to repel mosquitoes in particular, making it an effective insect repellent. Once absorbed into the body, geraniol is released from the sweat glands together with sweat, and it produces a subtle scent from within the body when taken daily, thus attracting attention from those who are concerned about body odor. For “Neonisin-e®”, we use a handmade organic damask rose otto essential oil that is truly valuable, which is steam-distilled without using chemical solvents from the flowers that are manually and organically cultivated in the soil of Kazanrak, Bulgaria, by a family of organic farmers that have been partnering with us since 2017. Experience the skin-beautifying effect that has long been recognized by humankind.



### **\* Plant-based glycerin that is essential for water retention in the human body**

Glycerin is an essential component for living organisms including plants. It plays an important role in the living body; in the human body, it binds to other fatty acids and is stored under the skin and around internal organs. It prevents the evaporation of water from the skin and hydrates by attracting moisture from the air into the skin. Its tiny molecules penetrate the skin deep into the stratum corneum to soften the skin. It also has a warming effect, as it generates heat in contact with water. It has an excellent moisturizing effect on dry and rough skin as well. It is believed to replenish the skin with essential moisture, leaving the complexion hydrated, healthy and beautiful.



## \* **Liposomal function of lecithin; a component of the cell membrane**

Hydrogenated lecithin derived from soybean is a natural ingredient produced by adding hydrogen to soy lecithin to make it resistant to oxidation as well as to improve the stability. Lecithin is a phospholipid and rich in fatty acids such as linoleic acid. Most abundantly found in the human brain, it is a major component of the cell membrane. Lecithin is used in "Space Cosme", as we recognize its liposome function that enhances the permeation of ingredients, moisturizing function similar to animal-derived ceramide, and emulsion function that helps emulsification. Liposome is a 0.1 to 0.2µm microcapsule consisting of multi-layered phospholipids, which are biogenic substances. It is believed that the minute capsule that is smaller than skin membrane delivers the essential beauty ingredients deep into the skin.



\* Though it depends on the amount each individual uses, the contents of the product (100 ml) should last for about a year when applied daily and only to the face. The size of year's supply is selected for long-term astronaut missions, as well as to stop excessive consumption of small containers for preventing the destruction of nature. A large amount of the product can be used daily, or it can be applied to the whole body or shared among family members. Use as much of the product a day or as many bottles a year as you like for additional benefits.

### **[Q & A]**

#### **What is the difference between Space Cosme Facepeace and conventional skincare products?**

A: What distinguishes Space Cosme from others is that it is a skincare product (creamy emulsion) that is chemical-free (does not contain any chemical substances) and plant-based (using 100% plant-based ingredients). The environment-friendly, gentle-to-the-body skincare product that is expected to be used in space has been developed by innovative research on lactic acid bacteria, space technology, and the 21st century green technology of Japan's national research institutes. Numerous chemical substances such as synthetic preservatives used as antiseptics, alcohol (ethanol), and synthetic surfactants to emulsify oil and other ingredients for a creamy consistency were needed in development and production of many conventional skincare products. (It is easy to produce non-emulsified products that are made only with oil or water.) Now that times have changed, human space exploration and environmental pollution of the Earth have become a reality. The major difference probably is that we lead the world in technological innovations that could not be realized with the 20th century chemical technology. We have achieved this by adopting the results of the innovative research on lactic acid bacteria, space technology, and the 21st century green technology brought by the industry-academia collaboration between Kyushu University and other national research institutes of Japan, as well as utilizing natural raw materials unique to Japan such as soybean, rice, and Japanese plum. We would like many people around the world to learn about the world-class innovations by Japan's national research institutes.

#### **What are the chemical components that are generally prohibited from being brought into spacecraft?**

A: The use of alcohol (ethanol) and chemical or synthetic ingredients contained in standard skincare products used on the ground is prohibited.

Volatile organic compounds such as alcohol (ethanol) should not to be used.

Reason: The use of water-soluble volatile organic compounds has a negative impact on the performance of the Environmental Control and Life Support System (ECLSS).

#### **In which country is the production planning of Space Cosme Facepeace done?**

A: Inspired by the world's great outdoors that are reminiscent of space and developed using the advanced research results of Japan's national research institutions (Note 3) that have been adopted by an international space station, Facepeace is a Japan-made product of world-class quality, which is produced in Yokohama, an international city of history and culture. Traveling beyond the sea and sky, it will reach people everywhere on the Earth as well as those who in planetary orbits. We hope many of you will pick up Space Cosme and try it out.

### **●[Challenges of skincare in space life]**

Challenges in space life include skin peeling on the sole of the foot, hangnails on the fingers while searching, dryness, UV rays, body odors and pimples caused by the growth of indigenous skin bacteria. Also, there may be a problem of bedsore due to induced hibernation in the future.

On the other hand, there are issues such as restriction of ingredients to be used in space. On the ground, issues of safety care for bedsores and bacterial dermatitis in nursing care settings due to the population aging and environmental destruction by chemical ingredients.

To address these skincare challenges of humankind, the cutting-edge technology for our product which was adopted as a candidate item for the ISS, was applied to a dermatological field. With Japan's advanced green technology, we will develop chemical-free skincare products containing lactic acid bacterium antibacterial peptide which prevents bacteria, moisturizes, and protects skin, cares for the whole body with a small amount for a long time, and protects the body of spacecraft from damages, for the first time in human history.

To address the needs of people who are concerned about **skincare** and **skin problems** in space and on Earth, and wish to do **skincare with safe ingredients** that are gentle to both the body and environments, **the cutting-edge technology for ORALPEACE**, which was adopted as a candidate item for the ISS, was applied to a dermatological field. We develop innovative **chemical-free skincare products** that provide **antibacterial effects, moisture retention and protection to solve human skincare issues.**

● **Skincare challenges in space**

- (1) Skin troubles caused by UV rays and dryness
- (2) Body odors and pimples in an insanitary environment
- (3) Skin peeling on bottom of feet
- (4) Damaged fingers/hangnails as a result of looking for things
- (5) Bedsores during induced hibernation in the future
- (6) Restriction on chemical components and



● **Challenges of skincare on Earth**

- (1) Increased number of bedsores in nursing care settings due to population aging
- (2) Increasing nursing care costs which are expected to exceed 25 trillion yen per year in 2040
- (3) Care of atopic and bacterial skin troubles
- (4) Challenges for human skincare and beauty
- (5) Global environmental destruction through manufactures and consumption of chemical ingredients



● **Development/implementation system**



GreenTechnology  
人類で初めて乳酸菌抗菌ペプチドの皮膚用途に応用

乳酸菌抗菌ペプチド  
特許製剤ネオナイシン



皮膚ケアクリーム



● **Improvement of convenience of life in space**

- (1) Hygienic measures for skin peeling on bottom of feet
- (2) Keeping bare skin clean
- (3) Break down the microorganisms causing troubles, and prevent body odor and skin problems
- (4) Miliaria (Staphylococcus aureus/Streptococcus,) acne (acne bacteria,) candida
- (5) All-in-one skincare for the whole body
- (6) Possibility for treatment of bedsores during induced hibernation in the future
- (7) Skin protection from UV rays and dryness
- (8) Avoid the risk of damage on spacecrafts by using no chemical ingredients
- (9) Condensed type to reduce baggage size and waste

● **Contribution to humanity and the planet to be achieved**

- (1) Reduction of nursing care costs and burden exceeding 10 trillion yen per year
- (2) Contribute to people around the world who suffer from skin troubles
- (3) Protect human beings from percutaneous absorption of chemical components
- (4) Reduce Co2 emissions by carbon offset products

**Market size:**

- (1) Skin trouble care
- (2) Skincare/cosmetics

**Social impact:**

Only sustainable plant-based ingredients are used in order to protect the global environment  
Increasing income of low-income earners with disabilities and realization of their social participation

**Skincare effects expected in space**

To address skincare challenges in space,

- ① it moisturizes peeling skin on bottom of feet cleanly, prevents skin pieces from floating around, and keeps a room clean.
- ② Keep damaged fingers due to searching things clean.
- ③ Skincare which prevents pimples and skin troubles by inhibiting the bacterial growth and body odor in unsanitary skin condition.
- ④ Emollient ingredients from vegetable oil (oil-based moisturizing ingredients) and hydrating ingredients from glycerin (water-based hydrating ingredients) protects skin from UV rays and dryness.
- ⑤ All-in-one skincare for the whole body. Also, for hair conditioning.
- ⑥ Possibility for care of bedsores during induced hibernation in space in the future
- ⑦ Concentrated type. A small amount is required to use. Reduces weight of loaded items and waste.
- ⑧ Chemical free that was achieved by the innovation of preservation technique reduces risks of damages on a spacecraft.

We aim to provide new benefits to human kinds.

**Skincare effects expected on Earth**

Research and development focusing on “protection of healing wounds while disinfecting affected areas,” which was difficult to achieve with antibiotics and synthetic disinfectants, by utilizing the characteristic of lactic acid bacterium antibacterial peptide that “sterilizes only bacteria and does not destroy human cells.”

We aim to contribute to early cure of “bedsores” of bedridden people which has become a problem in nursing care settings, to improve patient QOL as a hygiene moisturizing agent that accelerates recovery, and to reduce nursing care costs in Japan, which currently exceeds 10 trillion yen per year and is estimated to be 25 trillion yen in 2040, and the burden of nursing care in the world. It also can be used for people suffering from bacterial dermatitis and atopic dermatitis.

The ingredients are made from plants and water, and do not contain any chemical components. We aim to reduce Co2 emissions, reduce environmental burden by its high biodegradability, and aim to contribute to protecting the natural environment of the earth.

**Contribution of Space Cosmetics to all mankind**

There used to be only two options for antibacterials for skin: synthetic disinfectants with adverse effects on human body and antibiotics with issues of resistant bacteria. By applying environmentally-friendly lactic acid bacterium antibacterial peptide to dermatological use, which has superior effects at an extremely low concentration of a few thousandth of synthetic disinfectants and antibiotics, and is decomposed into amino acid after used,



we aim to address bedsores care of elderly people, people with disabilities, and patients fighting against diseases, as well as bacterial dermatitis such as miliaria and impetigo of infants, atopic dermatitis, general skincare preparations, and skincare and cosmetic applications.

## What is TRIFE.Inc ORALPEACE Project?

### 1. Global issues to be solved

In Japan, where the world's leading aging population is advancing, the number of elderly people in need of nursing care is currently more than 6 million, and the amount of nursing care cost is over 10 trillion yen per year. By 2040, it is expected to increase up to 25 trillion yen, which is considered to be a major social problem as the burden on caregivers increases. In the future, the same aging problem as Japan is expected to spread on a large scale across the world.



According to the survey conducted by the Ministry of Health, Labour and Welfare, the difference between the health expectancy that enables independent living without nursing care and the life expectancy is about 10 years, therefore, it is urgently required to shorten this bedridden period in nursing care.

In recent years, the Ministry of Health, Labour and Welfare has promoted thorough oral care that clarifies the correlation between the number of remaining teeth and the incidence of dementia, and periodontal disease bacteria and systemic diseases (myocardial infarction, diabetes, etc.) and expands the health expectancy by developing 8020 campaign.

However, in nursing care settings, as elderly people who have difficulty to rinse mouth or spit have a risk to have diarrhea when they swallow oral disinfectants, and the burden on caregivers is still heavy with water care alone.

In order to reduce the physical, mental, and temporal burdens on caregivers, there was a need for oral care products that are safe to swallow while enhancing the effectiveness and efficiency of care, as well as oral care products with low environmental burdens required in the new era that also help prevention of dementia in young people and healthy longevity.

### 2. Overview of ORALPEACE Project

Based on the cutting-edge research on lactobacillus biotechnology to fight against bacteria by using bacteria by Kyushu University, this project is intended to develop an innovative ORALPEACE for oral care with chemical-free ingredients and that is safe to swallow while sterilizing the causative bacteria in the mouth, and is containing a lactobacillus antibiotic peptide formulation Neonisin, which was invented through industry-academia-government collaboration with institutions including the National Center for Geriatrics and Gerontology.



ORALPEACE which were developed in 2013 has distributed a total of more than 1 million units so far. They were adopted at more than 2,000 institutions including the University of Tokyo Hospital as well as advanced medical institutions and nursing care facilities. In 2020, JAXA selected it as a candidate product to be use at ISS based on research results. Also, export of them from Japan to Europe, the US, Asia, etc. started.

With the aim of applying leading innovative technologies of mankind that can also be used in space to solve social issues, we are working on a sustainable business that addresses SDGs, such as reducing nursing care costs which continue to increase at least 10 trillion yen per year in Japan alone and human burden, creating jobs for disabled people through our main business, supporting disaster-affected areas, and protecting the environment with highly biodegradable products.

#### 3-1. History to date

In 2011, when the Great East Japan Earthquake occurred, two of the world's leading experts in research on antimicrobial peptides of lactic acid bacteria antimicrobial peptide, honorary professor Kenji Sonomoto from Kyushu University and Kohei Nagatoshi, consulted with Daisuke Teshima, a business consultant and social entrepreneur who had worked on supporting disabled people through the organic cosmetics business, to see whether their research results, the antimicrobial peptides derived from lactic acid bacteria in soy pulp produced in Fukuoka prefecture, could be used to contribute to society.

Having seen Teshima's father fighting against disease and other elderly family member having oral problems due to old age, ORALPEACE business was launched in 2013 with the aim of becoming a social business where innovative technologies can lead to healthy longevity and the creation of work for people with disabilities. Initially, it was in a difficult situation with 1 employee and 0 funds,

but more than 100 researchers and clinicians, etc. supported and moved forward with the business as volunteers. The product was adopted at advanced medical institutions nationwide, and provided a total of more than 1 million units.

Yokohama Business Grand Prix Grand Prize, Japan Venture Grand Prize, Japan Foundation 2016 Social Innovator, Good Design Award, Japan Agricultural Chemistry Technology Award, appeared in the NHK World Japan interview program, selected to be used at the International Space Station.

#### 4. Impact

##### (1) Quantitative evaluation

ORALPEACE was selected by JAXA for candidate product for the ISS, suggesting clinical efficacy and expected reduction of nursing care burden based on various academic societies and reports, and adopted at more than 2,000 advanced medical institutions. A total number of more than 1 million units was distributed to elderly people requiring nursing care in Japan, which contributed to improvement of QOL of elderly people and reduction of burden on caregivers. In addition, profit distribution was achieved by production and sales at institutions for the disabled. It leads to economic independence of people with disabilities at work.

##### Estimation of effects (theoretical estimation)

###### ● Reduction of nursing care costs in Japan

Estimated annual nursing care cost is 10 trillion yen in 2020, and 25 trillion yen in 2040. By increasing the health expectancy, care costs of several trillion yen will be reduced at a rough estimate.

###### ● Reduction of nursing care costs in Asia

If health expectancy is extended by oral care, care costs will be reduced by several hundreds trillion yen.

Annual nursing care costs in Japan: 10 trillion yen ÷ Number of elderly people requiring nursing care: 6 million = Annual nursing care costs per person: 1.7 million yen \*Document by Ministry of Health, Labour and Welfare: proportion of elderly people requiring nursing care among the 36 million population aged 65 years or older in Japan, approximately 16%; 2050 Estimated population of Asian population aged 65 years or older, 600 million (\*UN) × 16% = Number of Asian elderly population requiring nursing care in 2050, approximately 100 million people. Annual nursing care cost across Asia in 2050 is estimated to be about 170 trillion yen.

###### ● Reduction in the population of nursing care workers in Asia

Oral care reduces the number of elderly patients requiring nursing care by 30% → About 100 million young people can be engaged in industries other than elderly nursing care

The number of elderly people requiring nursing care in Japan is 6 million, while the population of nursing care workers is about 2 million = 0.3 workers are needed per elderly person requiring nursing care. The number of Asian nursing care workers in 2050 is estimated to be about 30 million.

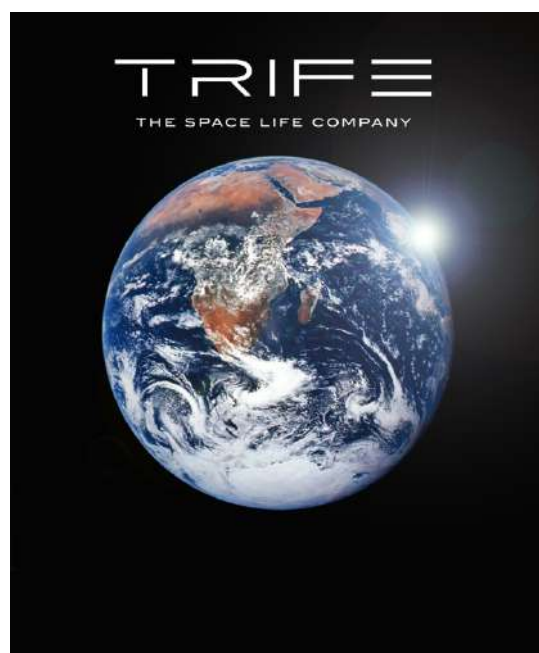
All of the above are rough estimates. In the future, however, we believe that enormous amounts of money and workforce can be transferred to areas other than nursing care for elderly people, such as space development and food problem solution, contributing to occupational diversity throughout the world and bringing about great progress to mankind.

##### (2) Qualitative assessment

This initiative was covered in a variety of news and contributed to raising awareness of the importance of oral care and healthy longevity among many people and to raising awareness of health. We also contribute to normalization and encouragement of motivation among people with disabilities.

#### 6. Sustainability

ORALPEACE Project has worked hard to take off into a sustainable business. Products include oral care products using patented technology and skin care products, and sales revenue is the source of activities. We hope that innovative personal care products will contribute to healthy longevity and expand sustainable business models to the world.

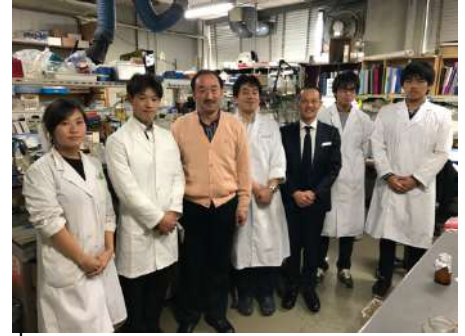


## ●Other

Prior to ORALPEACE Project. Amid concerns about the future, I have been doing volunteer activities for 10 years to the extent that I can do. However, because of Lehman shock, I became penniless and keenly realized the need for a sustainable business where activities can be continued.

In the course of trial and error, I have been trying to create a business model that merges Japan's cutting-edge technologies with healthcare business ideas, and aims to solve family problems.

I have had supports from many people since I started from scratch, and now, we have had a wonderful opportunity to send ORALPEACE to space with the thoughts of many people.



We hope that many people around the world will be aware of our activities by this event, and that we will be able to encourage many people who are confused in the COVID-19 disaster.

We also hope that we will contribute to the development of all humanity with oral care products using innovative space technology and new skincare products, and expand our products and business that is gentle on people and the environment to the world from Japan, an advanced aging country. We would appreciate your support very much.

Daisuke Teshima, Representative director of TRIFE.Inc ORALPEACE project, Small and medium enterprise management consultant certified by Ministry of Economy, Trade and Industry

## History of TRIFE.Inc ORALPEACE project

- December 2012: Press conference on the invention of lactic acid bacteria antimicrobial peptide "Neonisin" (Kyushu University Press Club)
- June 2013: Press conference on the launch of ORALPEACE project for "creation of work with innovative oral care products for people with disabilities" (Kioi Forum)
- July 2013: Gel type and spray type oral care products "ORALPEACE" were launched
- February 2014: The Grand Prize of Japan's largest business contest "Yokohama Business Grand Prix 2014"
- July 2014: Approved as the only toothpaste and oral care product in the "Donguri Mark Products," an environmentally-friendly product with no CO2 emissions defined by the Ministry of Economy, Trade and Industry.
- February 2015: The Best Award of Kawasaki City's Business Grand Prix "Kawasaki Entrepreneur Audition 2015"
- February 2015: The Best Award of "JAPAN Venture Awards 2015," which determines the top of Japanese venture company.
- March 2015: The Consumer Reviewer Award of the Social Products Award 2015 as a social product that contributes to SDGs
- April 2015: Organic certification approved by European organic certification body was granted, and a patent for "Neonisin" was obtained
- April 2016: Donations and distribution of ORALPEACE in the areas affected by the Great Kumamoto Earthquake
- June 2016: "ORALPEACE For PET" a toothpaste and oral care product for dogs was launched
- September 2016: Selected as "10 people changing the future of Japan" in the Social Innovator 2016 hosted by the Japan Foundation
- March 2017: Obtained "Wakasaki Standards" designated by Kawasaki city as optimum welfare products and only certified products of the toothpaste and oral care category
- July 2017: Press conference on the invention of new formulation "Neonisin-e" that also covers oral candida (Yokohama Port Opening Memorial Hall)
- October 2017: The first "Good Design Award 2017" for toothpaste and oral care products, and obtained a patent for "Neonisin-e"
- May 2018: "ORALPEACE Outdoor Adventure," the world's first outdoor toothpaste product which is friendly to natural environments, was launched
- September 2018: "LOVE IS ORGANIC" (by ADK) was nominated for Film Division short list in 2019 Spikes Asia Advertisement Award
- March 2019: The "Japan Society of Bioscience, Biotechnology, and Agrochemistry Award," as the first awarded oral care product Research and development of oral care products that are safe to swallow
- February 2020: Provided ORALPEACE to 3,600 passengers on a luxurious guest ship "Diamond Princess" which was stopped at Yokohama Port
- September 2020: ORALPEACE project was broadcasted across the world in NHK World Broadcast "Direct Talk"
- December 2020: "ORALPEACE Clean & White" and a skin care product "BODYPEACE Premium Hand Care Cream" were launched
- January 2021: The "Trife Space Project" was launched to shift to a space product venture that utilizes space technology to solve global issues

- March 2021: Starting in Thailand, the export of ORALPEACE spread to 15 countries around the world, including Europe, America, and Asia
- November 2021: Officially adopted by JAXA (Japan Aerospace Exploration Agency) as items to be used at the ISS (International Space Station)
- December 2021: Released “FACEPEACE Space Cosme” and “ORALPEACE Space Toothpaste” using the 21st century space technology to solve human issues

To media personnel: please feel free to contact us to request for interviews, to hire images or products, or to ask questions.

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