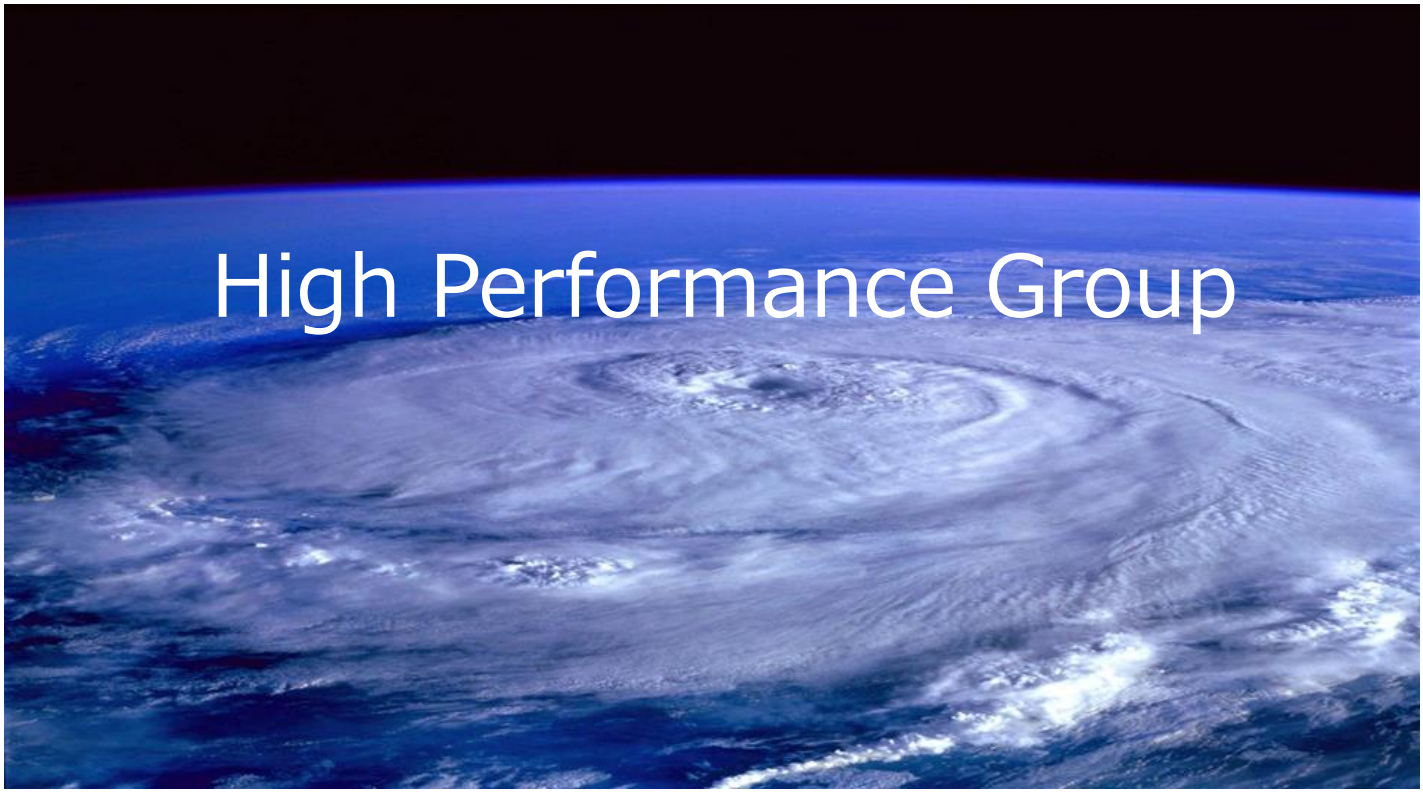
High Performance Group

株式会社HPG

Corporate Profile



We would like to be a company that challenges without being bound by common sense while looking at "people, the earth, and the environment", and always delivers products and services of stable quality to everyone with "safety, security, and joy" with new technologies.

In addition, based on the management and operation of patent no. 1 3704609 that succeeded in dissolving water-soluble active ingredients such as catechins and vitamin C directly into vegetable oil (oil base) without using any third ingredient (surfactant), we are engaged in consulting work in various fields such as food, clothing, housing, leisure, etc.

In addition, we aim for ESG management, such as committing ourselves to ensuring that companies are able to implement governance in consideration of the environment and society.

HPG Co., Ltd.
CEO
Masanori　Kanayama

CATECHIN/DEVELOPMENT TECHNOLOGY

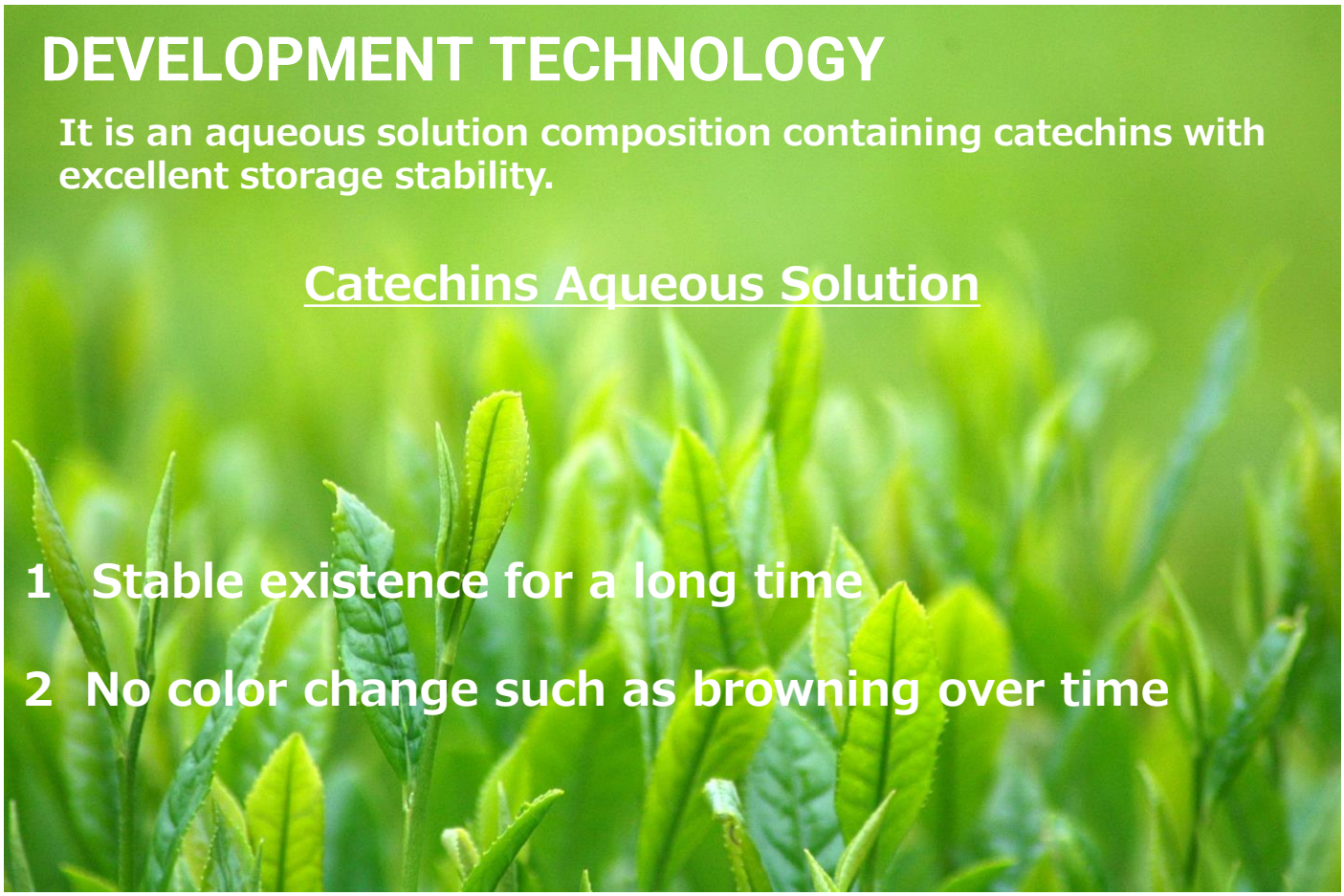
Patent application started in August 2021

ALL COMPONENTS ARE EDIBLE FOOD ADDITIVES
CATECHINS-CONTAINING AQUEOUS SOLUTION COMPOSITION WITH EXCELLENT STORAGE STABILITY

DIFFERENTIATING POINTS FOR CATECHIN AQUEOUS SOLUTIONS WITH EXCELLENT STORAGE STABILITY

Current challenges :

Polyphenols containing catechins are very unstable because they are easily oxidized by oxygen dissolved in water and oxygen in the air.
When dissolved in an aqueous solvent, the expected useful action such as reactive oxygen removal action is reduced, and it discolors with oxidation, and the storage stability is lacked. As a result, it is difficult to dissolve in an aqueous solvent and handle it in a liquid state, and it is a major obstacle in application to food and beverage, cosmetics, pharmaceuticals, and the like.



A new development in virus inactivation with a natural ingredient - green tea catechin (EGCg)

Patent application 〈Processing technology to stabilize green tea catechins (EGCg) at high concentrations in aqueous solutions〉 started in August 2021

The outbreak of the novel coronavirus (COVID-19) has completely changed social life.
While the development of vaccines and therapeutic agents is progressing, the outbreak of new mutant virus strains is requiring increasingly strong preventive measures. In such a situation, green tea catechin (Epigallocatechin gallate, EGCg), as a natural ingredient with potential antiviral effects, has been verified and published for its inactivating effects against viruses in Japan and overseas.
However, catechins and EGCg, which have a strong antioxidant effect, are highly susceptible to oxidative deterioration and lack storage stability, which is a major drawback in the development of various products.
To overcome this lack of stability, a formulation that is stabilized at a high concentration in water has been developed, and verification experiments have shown that it is effective in inactivating various viruses that repeatedly mutate, such as influenza and novel coronaviruses, by binding to viral proteins and preventing them from entering cells. It has also been shown in verification experiments that it has an inactivating effect by binding to viral proteins.

- A research team led by Professor Masahiko Kurokawa, Vice President, Dean of the Faculty of Pharmaceutical Sciences, Kyushu University of Health and Welfare, conducted verification experiments on the inactivation effects of various influenza viruses.
- The inactivation of other viruses, such as the novel coronavirus and SARS virus, was verified by a research team led by the National University.

Effective inactivation of all viruses confirmed
New development in preventive measures
HPG Co., Ltd. (Chuo-ku, Tokyo; Masanori Kanayama, President) has successfully developed a water-soluble formulation technology of highly concentrated catechin EGCg with excellent storage stability and has started to apply for a patent as the world's first processing technology to stabilize the product at a high concentration in aqueous solution.
Currently, this aqueous solution formulation is stabilized at a high concentration of 10,000 ppm, and the concentration can be easily adjusted by dilution.
In addition, since all the components that stabilize the product are food additives approved by the Ministry of Health, Labor and Welfare, there is no need to worry about adverse reactions if they enter the body, and children and the elderly can take the product through oral care without anxiety.
Furthermore, depending on the concentration added, if the concentration shows an inactivation effect, there is almost no damage to the original taste, aroma, or color of existing products due to astringency, bitterness, or discoloration peculiar to catechin EGCg, and the product can be used in a variety of fields.

- Potential of highly concentrated catechin, EGCg pharmaceutical preparations

At present, there are a variety of products on the market to prevent viral infections, but since this technological product is highly effective against bacteria as well as viruses, it can be used as a substitute for alcohol products that can cause rough hands, in the kitchen and food handling fields, and as a preventive measure against not only human but also bird flu and swine flu.

Summary of verification data from the Kurokawa Research Team

Green tea is rich in catechins, and epigallocatechin gallate (EGCg), one of the catechins, is known to have an antiviral effect by inhibiting the adsorption process of the virus to cells during the replication process. In this study, we examined the anti-influenza effect of EGCg and its mechanism of action by performing plaque reduction assay using MDCK (Madin-Darby canine kidney) cells against four kinds of influenza A and B virus strains in vitro. They investigated the anti-influenza effect of EGCg by performing plaque reduction assay using MDCK (Madin-Darby canine kidney) cells. As a result, they confirmed that EGCg inhibited the adsorption or entry process of virus particles into the cells for four kinds of influenza virus strains.

Profile of Masahiko Kurokawa:
Vice President, Dean, Director of Pharmaceutical Sciences, Kyushu University of Health and Welfare
Professor, Department of Biochemistry, Graduate School of Medical and
Pharmaceutical Sciences

Research Description:
We have been conducting research on the development of new antiviral drugs from traditional medicines and supplements, the pathogenesis of viral infections and the analysis of host immune defense mechanisms, as well as basic research on viral vectors for gene therapy. In addition to these studies, we have been conducting research to prove and analyze the exacerbation of infectious diseases caused by exposure to environmental chemicals in the fetal and neonatal period and metabolic syndrome using virus-infected animals as research that can contribute to the maintenance and improvement of QOL. In recent years, we have been conducting research on elucidation of pathological mechanisms of infectious diseases and lifestyle-related diseases, development of novel preventive and therapeutic methods, and risk assessment of environmental chemicals on host immune mechanisms by using knowledge and experimental techniques in biochemistry, molecular and cellular biology, genetic engineering, bacteriology, virology, and immunology. For these research, we have established a collaborative research system with internal and external researchers (universities, research institutes, and companies), with the aim of contributing to the maintenance and improvement of the quality of life of the people by efficiently returning the research results to society.

Summary of verification data of the National University Research Team

As typified by the term " Infectious disease panic," various infectious diseases continue to inflict serious damage on life, society, and the economy. In recent years, attention has been focused on the antiviral effects of various materials, and plant-derived ingredients such as EGCg have been actively studied. In this study, the antiviral effect of EGCg against human coronavirus (HCoV)-229E, which is closely related to SARS-CoV-2 and causes cold symptoms in humans, was measured using 50% Tissue Culture Infectious Dose (TCID50) was used as an indicator. The results showed that EGCg at a low concentration of 10 ppm had a certain inhibitory effect on the infection due to the synergistic effects of direct inactivation and adsorption inhibition.

Product features and various applications

Product features:

1. Don't let the catechin feel astringent.
2. Color tone changes such as browning of added food and beverage products do not occur
3. Spraying the entire face, such as throat and nasal cavity, as a spray
   ↓
   Adsorbs on the mucous membranes for a long time
4. A small amount of addition can take sufficient catechins

Example of a product with the addition of an aqueous catechin solution with excellent storage stability

1. As a virus block spray (spraying, etc. on the entire face such as throat and nasal cavity)
2. As a virus disinfection and disinfection spray that does not use alcohol
3. As a virus block directly from the mouth with a tablet, etc.
4. As a virus block by spraying not only humans but also livestock directly or mixing it with water and drinking it
5. As a pet health supplement

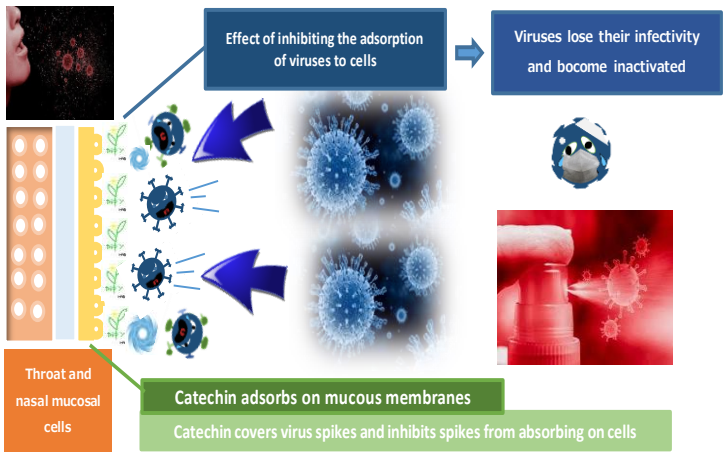
By spraying the mouth, throat, nasal cavity, etc. and the entire face, catechin adsorbs, and it can be developed and commercialized as a product that can be expected to block viruses for a long time
In addition, it can be used in various situations such as concerts, stages, sports facilities, etc.

By putting it directly in the oral cavity, the catechin gradually adsorbs on the mucous membranes in the oral cavity, blocking the virus for a long time. Development and commercialization are possible as products that can be expected to be effective if you lick three times a day as a guide
The taste can be seasoned in various ways such as grape and mint

Virus disinfectant sprays and liquids that do not use alcohol at all
In addition to the eradication effect of viruses, it can be developed and commercialized as a multi-product that can be expected to improve roughness by catechin without roughness and drying due to alcohol.
In addition, it is possible to safely and securely disinfect kitchen cutting boards and kitchen knives

Undiluted solution of catechin aqueous solution at a concentration of 10000 ppm
Production schedule of 1 liter ~
It can also be added to food and drink, and by adjusting the concentration of the undiluted solution, it can be used not only as a pet at home, but also as a flu virus (drinking water, spraying, watering, etc.) and as a health aid additive for livestock (bird and swine, etc.)

Inactivation effect on viruses (Image)



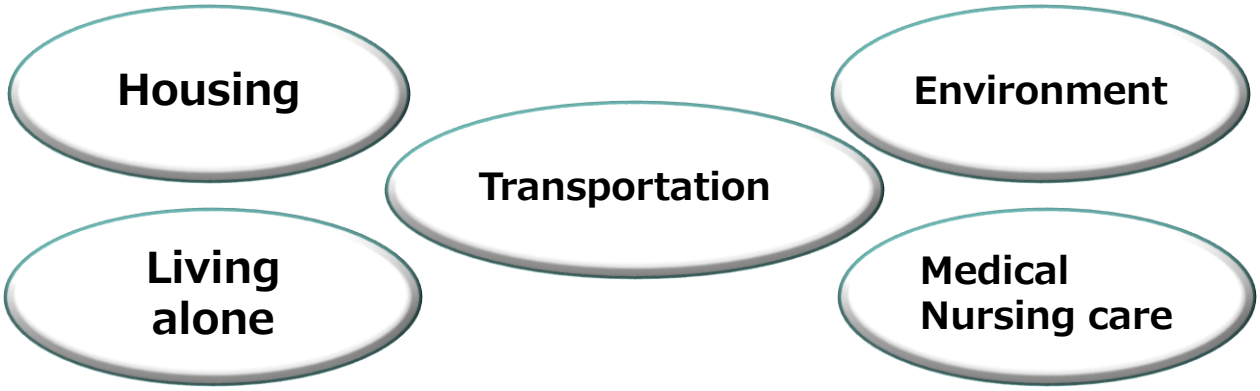
The above products are made only of food additives that do not use any chemical substances (e.g., low-grade alcohols, surfactants, etc.), so they are extremely safe for living organisms.
※ The posted photo becomes a sample product and an image product, it is different from the actual product.

HPG's Vision for the Near Future

New lifestyles have been highlighted around the world due to coronal ravages, but just because the corona problem has come to an end, there are many issues such as environmental problems (global warming), resource and energy problems, and responses to a super-aging society in the world.　In recent years, the movement to design cities that fundamentally change the way society should be by developing data infrastructures that can be used in various businesses and services in cities by utilizing advanced technologies such as AI and big data has been rapidly progressing internationally. In light of this situation, 31 local governments nationwide have raised their name in the public offering of supercity-type national strategic special zones that the government has recruited, as it is necessary to realize a super city concept that aims to be a "whole future city" that will advance future life ahead of the rest of the world through bold regulatory reforms and other measures.　Our "Super City" concept, which combines advanced technologies such as AI (artificial intelligence) and autonomous driving, is a pillar of the near-future vision, and we are considering the near future concept centered on how dx (digital transformation) in cities will change people's lives, and issues that are piling up, especially issues such as environmental problems and responses to a super-aging society.

HPG's Approach to the Near Future

We aim to build a sustainable socio-economic system that addresses issues such as responding to the environment and super-aging society, and to create a city that continues to create new value that is safe and secure, and to improve the quality of people's lives, and introduce some of them.



Subject : Housing/Living alone

- Not all dwellings are buildings tailored to the super-aging society
- It is difficult for elderly people living alone to go to the hospital.

Subject : Medical/Nursing care

- Emergency vehicle arrangements
- A caregiver is often required
- I was forced to wait for a long time for reception and medical examination

Subject : Environment/Transportation

- Environmental issues
- It is difficult for elderly people to drive alone
- Wheelchair users, etc. do not have a caregiver and difficult
- Difficulty moving from room to car, etc.

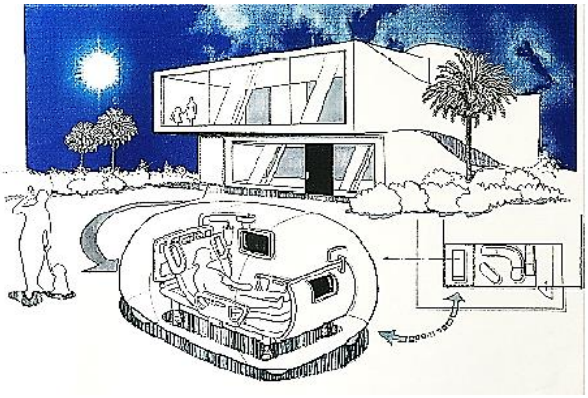
Subject : Roadway/Environment

- Accidents caused by driving due to aging
- Environmental issues
- Road issues such as traffic jams and traffic accidents

HPG's Vision for the Near Future

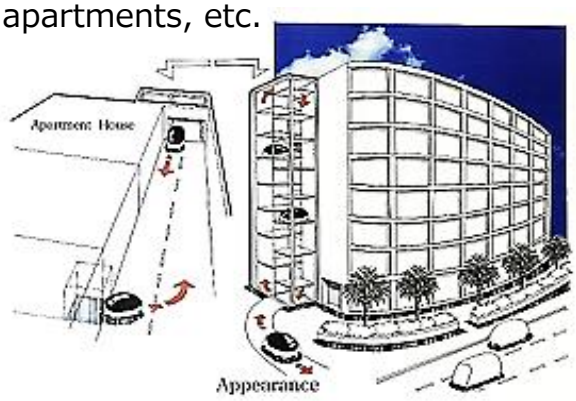
① Point of the concept

Structure in which a vehicle of transportation is integrated into a house



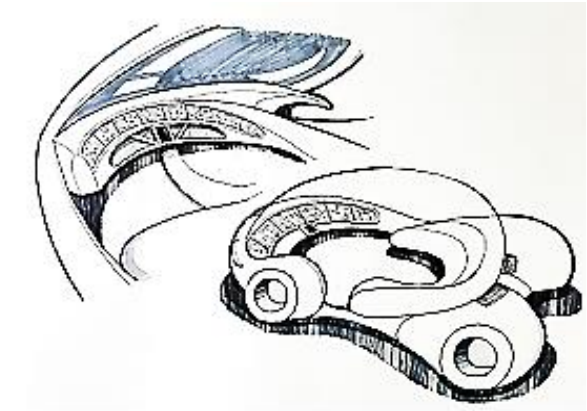
② Point of the concept

Vehicle transportation and housing structure that enables joint use from the living rooms of each dedicated part of apartments, etc.



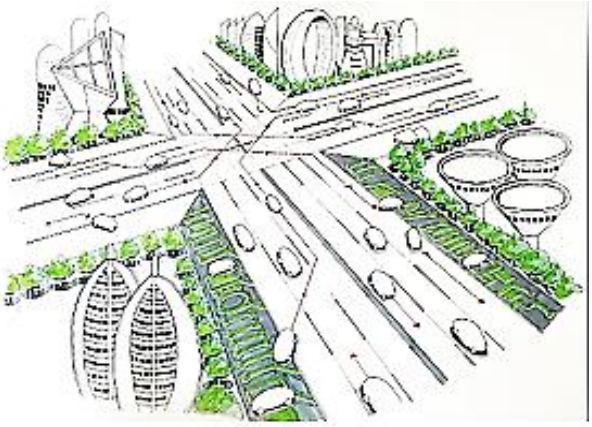
③ Point of the concept

Fully automatic vehicle structure that makes full use of all advanced technologies such as AI (artificial intelligence) and big data, can be operated with a smartphone, etc., and does not require steering wheel, accelerator, brake, etc.

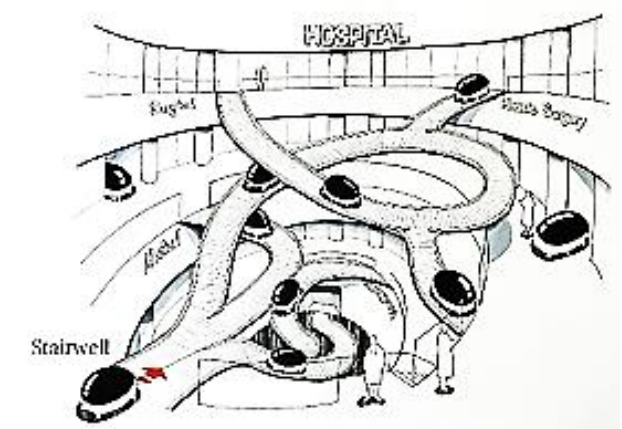


④ Point of the concept

A double-structured town building that makes up the city on the current road. On the road, we will make full use of advanced technology to develop advanced infrastructure and create an unnecessary automobile driving environment such as signals.



⑤ Point of the concept



You can move from home to the hospital while sleeping.
No need for a caregiver.
Hospital consultation without waiting time by a consistent system from automatic reception to consultation and drug arrangements.

Corporate Profile

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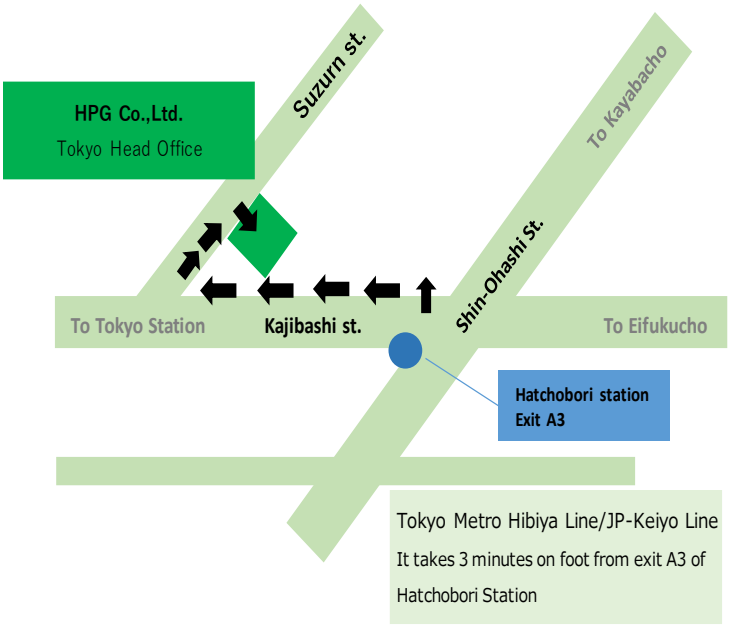

Business Description:

1. Development, manufacture and sale of drinking water, cosmetics, clothing, textile products for clothing, etc. containing green tea component "catechins"
2. Acquisition, holding, and operation of patent rights related to the green tea component "catechins"
3. Manufacture, sales and import/export of cosmetics, soaps, detergents, toothpastes, pharmaceuticals, quasi-drugs, reagents, pigments
4. Manufacture, sales and import/export of raw materials and materials for products such as cosmetics, soaps, detergents, toothpastes, pharmaceuticals, quasi-drugs, reagents, pigments, etc.
5. Manufacture, sale and import/export of medical instruments, tools, blame measuring machinery and equipment, Japanese and Western paper, stationery, sanitary products, household killings and anthelmintic agents, cosmetic equipment, wigs, sporting goods, art products, and crafts
6. Processing, sales and import/export of jewelry and precious metal products
7. Manufacture and sale of soft drinks and food additives
8. Acquisition and sales of industrial property rights, know-how, and various software related to computers, videos, music, etc.
9. Printing, plate making, publishing and photography
10. Performance of music, art, theater, sports, etc., and sale of tickets related thereto
11. Management of hotels and wedding venues, and its consignment and consulting services
12. Automobile transportation and automobile transportation handling, warehousing and packaging
13. Real estate sales, brokerage, leasing and management,civil engineering and construction work and travel agency
14. Insurance agency business based on the Automobile Damage Compensation Act and business related to the solicitation of life insurance
15. Business related to the sale and sale of used cars
16. Business related to the sale and sale of second and antique goods
17. Management of cram schools
18. All business incidental to the preceding item

We would like to be a high-performance company that responds to issues that go beyond pre-existing concepts, challenges without being bound by common sense, and always delivers products and services of stable quality to everyone with "safety, security, and joy" while taking on challenges from the perspective of "people, the earth, and the environment".

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