



ORYZA OIL & FAT CHEMICAL CO., LTD.



Environmental Stress-responsive Extract

cosmeHerbest™ SEABERRY

Hippophae Rhamnoides Fruit Extract



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1. Introduction

Our body is always exposed to the environment with irritations such as UV rays, temperature variation, dryness, microorganisms, and chemical substances. Skin protects our body from these invisible irritations. The skin is the largest body part and covers the entire body, 1.6 m² on adults, and its weight is approximately 16 % of the total body weight. Since the skin comes into contact with the environment it has various functions that are necessary to keep us alive and healthy. Some examples are: (1) Prevent moisture loss, (2) Regulate body temperature, (3) Protect the body from microorganisms and physical and chemical irritation, and (4) Serve as a sensory organ. It covers the entire body with a thin layer that is only 1.5 mm thick (epidermis and dermis). Therefore, it is considered as an important and highly functional body part.

Recently, there is a growing awareness about environmental problems such as air pollution and water contamination caused by rapid industrialization. Especially, air pollution caused by smoke from factories and car emissions is a serious problem. Greenhouse gases in air pollutants have caused global warming and many places in the world are experiencing abnormal weather conditions such as acid rain, drought, and temperature rise. There is also the potential risk of powerful UV rays irradiating the earth's surface due to the destruction of the ozone layer that protects the earth from harmful cosmic rays.

Our environment is becoming harsher to our bodies. Since our skin is also exposed to stronger irritations as a result, it needs more protection. Over a long period of time, our bodies have adapted to changes in the environment and evolved. Even now our bodies are probably evolving to cope with current environmental conditions. However, since the environment is changing faster than our ability to respond, our bodies are not able to keep pace with changes. Therefore, we are working hard to develop the best materials to protect the body and reduce irritations from various external factors (Fig. 1).

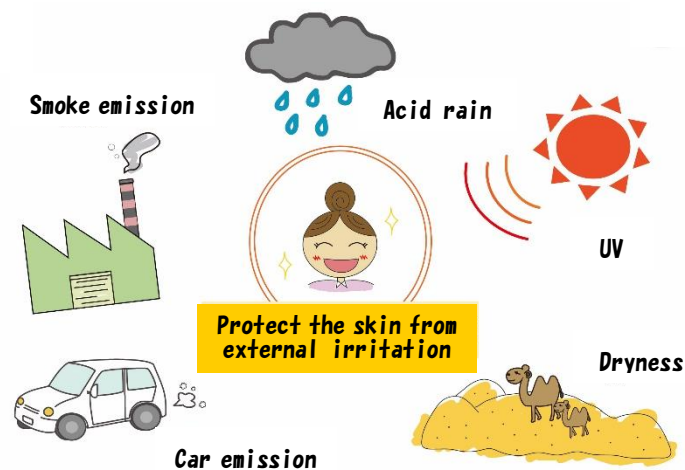


Fig. 1 : External irritation

2. Influence of Air Pollution to Skin

One serious environmental problem is air pollution. Some air pollutants are caused naturally while others are the direct result of human actions. The main nature-caused air pollutants are volcanic ash, pollen, dust, and yellow sand. The main human-caused pollutants are materials emitted from the combustion of fossil fuels in factories, thermal power plants, and cars as well as gases and particulate matter generated by manufacturing. Major air pollutants that negatively influence human health are nitrogen oxide (NOx), sulfur oxide (SOx), suspended particulate matter (SPM), and polycyclic aromatic hydrocarbon (PAH). Small suspended particulate matter with a diameter of 2.5 μm or smaller are called Particulate Matter 2.5 (PM2.5). They are even smaller than the diameter of a human hair which is only 70 μm and the diameter of pollen which is only 10 μm (Fig. 2).



Fig. 2 : Size comparison of PM2.5

Since they are so small, light, and prone to scattering, they can travel long distances. Currently, they reach Japan along with yellow sand from China making people aware of and cautious about bronchial asthma and other disorders. When extremely small air pollutants like PM2.5 get on the skin, they may enter the body through gaps in the skin structure and cause bronchial asthma or lung cancer when inhaled. Moreover, they may negatively affect the entire body when absorbed (Fig. 3).



Fig. 3 : Influence of Air pollution

According to research carried out on 400 women in Germany, subjects who lived in areas with a high air pollution level such as areas within 100 m from a major arterial road had more pigmentation than subjects who lived in areas with low air pollution levels. Their pigmentation points were 1.35 times higher on the forehead, 1.15 times higher on the cheeks, and 1.13 times higher on the hands. Their nasolabial folds were also 1.04 times greater⁽¹⁾ (Fig. 4).

Fine particles generated by the combustion of fossil fuels adds oxidative stress to living bodies and activates inflammation-related transcription factors such as NF-κB and AP-1, causing inflammation as a result. It is reported that this reaction causes heart disease, pulmonary fibrosis, and bronchitis when inhaled from the lungs in addition to inflammation⁽²⁾.

Among air pollutants, there are a number of reports about cigarette smoke which affects the skin. It increases the expression of matrix metalloproteinase (MMP) which is an enzyme that degrades collagen, proteoglycan, and elastin⁽³⁾⁽⁴⁾. Collagen and elastin exist in the dermis and are involved in the maintenance of the skin's elasticity. When they are degraded, the skin loses its elasticity and wrinkles are formed as a result.

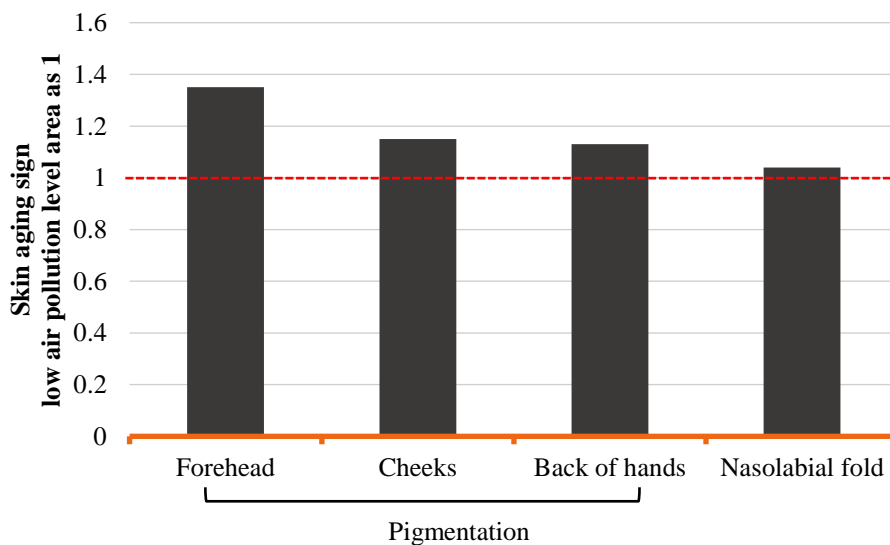


Fig. 4 : Skin aging in areas with a high air pollution level

Source : Journal of investigative Dermatology (2010) 130, 2719-2726

3. Influence of Dryness to Skin

The skin prevents body fluids from evaporating and escaping from our bodies. This function is performed by the skin's outermost layer called the corneum. The epidermis is approximately 0.2 mm thick. The corneum is part of it and is only 0.03 mm thick. This extremely thin layer is made of many layers of corneocytes. This thin layer prevents evaporation of essential moisture from our body. However, when the skin is exposed to a dry environment for long periods of time, gaps are created between cells and cells of the corneum start to peel up. These gaps allow moisture evaporation and the entry of microorganisms, dust, and other foreign matter into the body, causing inflammation. Under these conditions, the skin's barrier functions cannot be performed (Fig. 5).

Currently, the environment we live in is becoming harsher because of global warming which is causing abnormal weather such as acid rain, drought, and extreme heat. We tend to think of winter when we talk about dryness. However, we often use air-conditioners in summer to prevent heat stroke. As a result, many people experience dry skin in summer because of air-conditioning. Now, dry skin can occur regardless of the season.

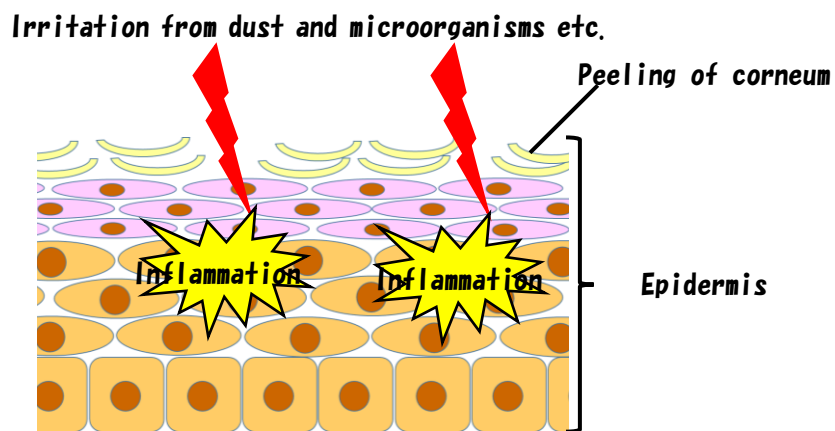


Fig. 5 : Loss of skin's barrier by dryness

4. About Seaberry

4-1 About Seaberry

Seaberry belongs to *Hippophae* in the family *Elaeagnaceae* and its scientific name is *Hippophae rhamnoides* L. It grows widely in central and northern areas of the Eurasian Continent and is called various names, for example sea-buckthorn (English), Чацаргана (Mongolian), 沙棘 (shājí, Chinese), oblepikha (Russian), and sanddorn (German). *Hippophae rhamnoides* L. is the most common sea-buckthorn species and is called *Sunaji Gumi* in Japan.

Seaberry is a deciduous shrub and is 2 to 10 meter high. It is a vigorous plant that can grow in harsh environments with severe sun exposure, drought, extreme temperature variation, dry weather, sand storms, soil erosion, or even in barren areas. The plant established its current form approximately 70 million years ago and survived for this long time with its strong vital force.

Its fruit is approximately 1 cm in diameter, its color is yellow to orange, and it tastes acidic. According to the Encyclopedia of Chinese Drugs, they contain isorhamnetin, quercetin, kaempferol, vitamin C, carotene, vitamin E, vitamin B1, vitamin B2, folic acid, and malic acid (Fig. 6). They also contain lipids which is rare for fruit. It has a high content of palmitoleic acid which is classified in ω -7 and ursolic acid which is a type of terpenoid.



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Fig. 6 : Fruit (left) and dried fruit (right) of Seaberry

4-2 New Component Found in Seaberry “Hippophaelic Acid”

It has been reported that seaberry fruit contains at least 200 types of components. ORYZA OIL & FAT CHEMICAL isolated the components shown in the figure below and determined the structure in joint research with Kyoto Pharmaceutical University. During the research, we discovered the new component “Hippophaelic acid” and named it after seaberry (*Hippophae rhamnoides*) (Fig. 7).

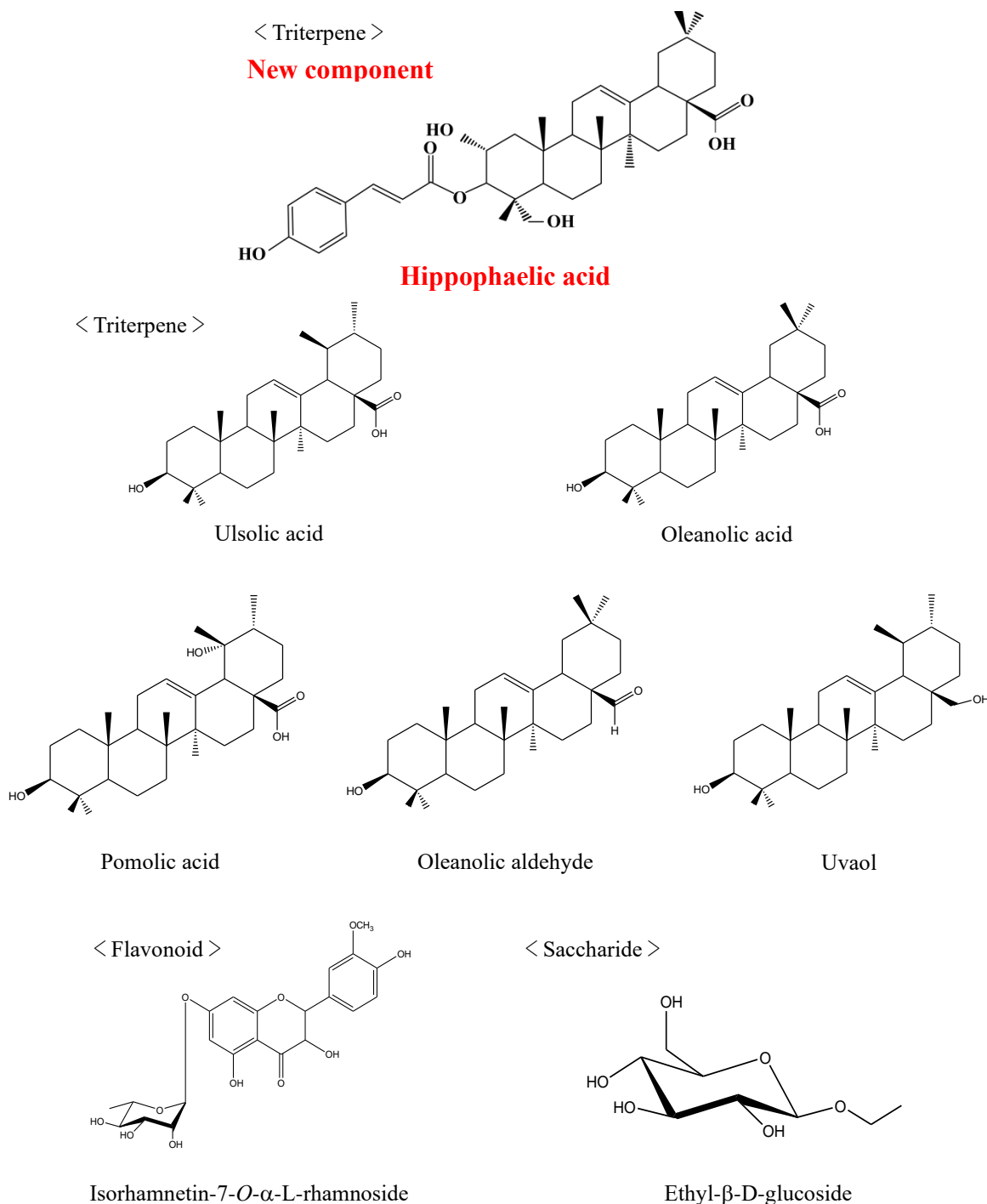


Fig. 7 : Containing component example of Seaberry

4-3 Use of Seaberry

Seaberry has been a precious nutrient source for wild animals and birds because it contains many components as described above. Its scientific name *Hippophae rhamnoides* and direct translation is “berry that makes horse hair shine.” According to Greek legend, it was a favorite food of the mystical white winged-horse Pegasus. The life history of Genghis Khan who established the Mongolian Empire used seaberry as a nutrient source for his soldiers and horses in battles. Seaberry is currently used in juices and health foods. Since it has high contents of vitamins C and E and polyphenols and anti-oxidative effect, it supports our health from within and protects us from oxidative stress.

Seaberry is also used to protect the environment because it can basically grow in any environment. It is cultivated to green deserts, prevent soil erosion, protect water sources, block wind, and strengthen soils structure.

It has been reported that seaberry has an effect to protect DNA and mitochondria from irritation caused by radiation. It is considered that polyphenols and flavonoids are involved⁽⁵⁾. According to a report, seaberry was used by astronauts in Russia to protect them from cosmic rays⁽⁶⁾. Seaberry is a super fruit used in many different ways to protect against environmental irritants.

ORYZA OIL & FAT CHEMICAL focused its attention on the strong vital force of seaberry that has survived in harsh environments for tens of thousands of years and carried out research to study seaberry’s ability to protect itself against severe environmental conditions. As a result, we discovered that seaberry has effects to reduce and inhibit irritation caused by air pollutants and dryness. We then developed the anti-environmental stress extract cosmeHerbest™ SEABERRY to protect us from living conditions that are becoming harsher and harsher because of air pollution, water contamination, and abnormal weather.



5. Effectiveness Evaluation

5-1 Anti-Oxidative Effect (Effect to Scavenge DPPH Radicals)

Reactive oxygen combats using its oxidizing power in order to protect our body from the attack of bacteria and viruses that have entered the body. However, since it attacks normal cells as well as bad cells, excessive reactive oxygen negatively influences the body. When the skin is exposed to irritation of UV rays, dryness, bacteria, or chemical substance, reactive oxygen is produced. Excessively produced reactive oxygen works on melanocytes in the skin's basal membrane and accelerates the synthesis of melanin pigments. Melanin pigments are transferred from melanocytes to keratinocytes and eventually appear on the skin surface as dark spots due to the skin's turnover. Reactive oxygen also destroys collagen and elastin existing in the dermis of the inner part of the skin. Collagen and elastin are important factors to maintain moist and elastic skin. When they are destroyed, skin loses its elasticity and becomes dull and prone to wrinkles.

Therefore, we first examined seaberry extract's reactive oxygen species scavenging ability.

Sample

- Seaberry extract

Extract of dried seaberry fruit. The amount 10 to 200 µg/mL is equivalent to cosmeHerbest™ SEABERRY 0.125 to 2.5 %.

Method

Seaberry extract solution (dissolved in 80 % ethanol solution) was adjusted in various concentrations in a 96 well plate. 75 µL was added to each well, 75 µL of DPPH solution (200 µM 1,1-diphenyl-2-picrylhydrazyl/ethanol solution) was added, and the solution was stirred using a plate mixer for one minute. The solution was left stationary for 30 minutes at room temperature and the absorbance was measured at 517 nm using a microplate reader. Ethanol was used instead of DPPH solution as a blank sample, and 80 % ethanol solution was used instead of the sample solution as the control.

$$\text{DPPH radical scavenging ability (\%)} = \frac{(\text{Control's absorbance} - \text{Sample's absorbance})}{\text{Control's absorbance}} \times 100$$

Result

Fig. 8 shows the DPPH radical scavenging ability when the concentration of the seaberry extract was adjusted to 10, 100, and 200 µg/mL. The radical scavenging ability was 7.8 % at 10 µg/mL and the ability was 58.2 % at 100 µg/mL and 86.7 % with 200 µg/mL, clarifying the extract has concentration dependent DPPH radical scavenging ability. This

indicates that the extract has an action to protect living bodies against attacks of reactive oxygen caused by external irritation.

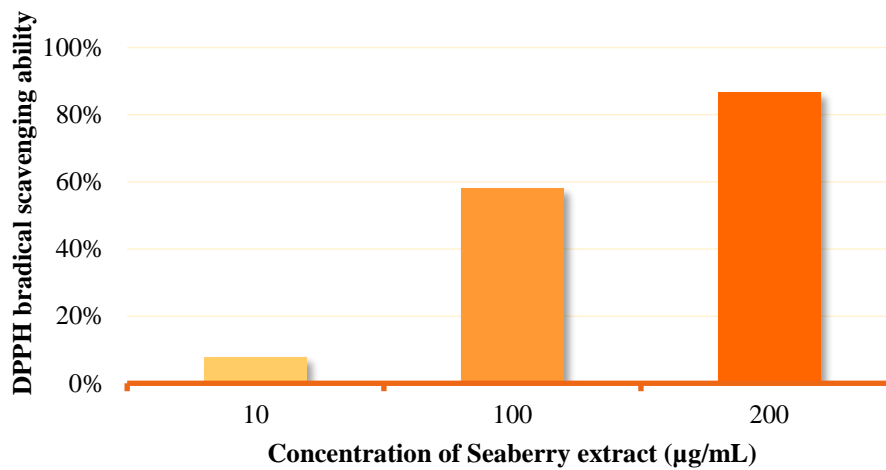


Fig. 8 : DPPH radical scavenging ability of Seaberry extract

5-2 Effect to Reduce/Inhibit Irritation of Air Pollutants

We are constantly exposed to air pollutants. Whenever we go out, we are surrounded by cars of which exhaust gas is a common air pollutant. Cigarette smoke and exhaust gas from diesel cars are also common air pollutants. Exhaust gas from diesel cars are especially hazardous. It is reported that when inhaled, it causes inflammation in the lungs and induces asthma and lung cancer⁽⁷⁾. It is also reported that these substances cause inflammation in living bodies when they get on the skin⁽⁸⁾⁽⁹⁾⁽¹⁰⁾. We examined seaberry extract's effects to inhibit inflammation.

Sample

- Seaberry extract

Extract of dried seaberry fruit. The amount 20 to 200 µg/mL is equivalent to cosmeHerbest™ SEABERRY 0.25 to 2.5 %.

- Preparation of vehicle exhaust particulate sample

1 mL of DMSO was added to 200 mg of standard environmental sample NIES CRM No.8 Vehicle Exhaust Particulates (National Institute for Environmental Studies), the sample was shaken over a night, and the eluate was obtained by filtering.

- Preparation of cigarette butts sample

Cigarette butts were collected, 2 mL of DMSO was added per filter, the sample was shaken overnight, and the deposit was removed to obtain eluate.

- Preparation of sample of particles in diesel car muffler

Residual soot inside diesel car muffler was taken using a cotton swab, 1 mL of DMSO was added per cotton swab, the sample was shaken overnight, and the deposit was removed to obtain eluate.

Method

Human epidermal keratinocytes were inseeded in 60 mm plates ($5 \times 10^4/\text{cm}^2$) and cultivated for two days. Then, eluate of each air pollutant was added to the culture media.

Vehicle exhaust particulate sample was added so that the percentage becomes 0.1 % (equivalent to the vehicle exhaust particulate concentration of 200 µg/mL) and cigarette butts sample and sample of particles in diesel car muffler were added so that the amount becomes 200 µg/mL. Seaberry extract was added so that the amount becomes 20 and 200 µg/mL at the same time with each air pollutant sample and cultivated for two days. The DMSO concentration in the culture media was adjusted to 0.1 %. After cultivation for two days, the culture media were collected and the Prostaglandin E2 (PGE2) concentration in the culture media was measured. PGE2 is known as a chemical messenger that causes inflammation and other problems. So, measurement of PGE2 provides an index of

inflammation of cells.

Result

When air pollutants such as vehicle exhaust particulate sample, cigarette butts sample, and sample of particles in diesel car muffler were added to human epidermal keratinocyte media, PGE2 concentration increased. (PGE2 is a chemical messenger that causes inflammation and other problems.) Thus, it is assumed that the addition of air pollutants caused inflammation. When seaberry extract was added, the increase of PGE2 concentration was inhibited (Fig. 9). This result suggests that seaberry extract is expected to have an effect to reduce and inhibit inflammation caused by air pollutants attached on the skin.

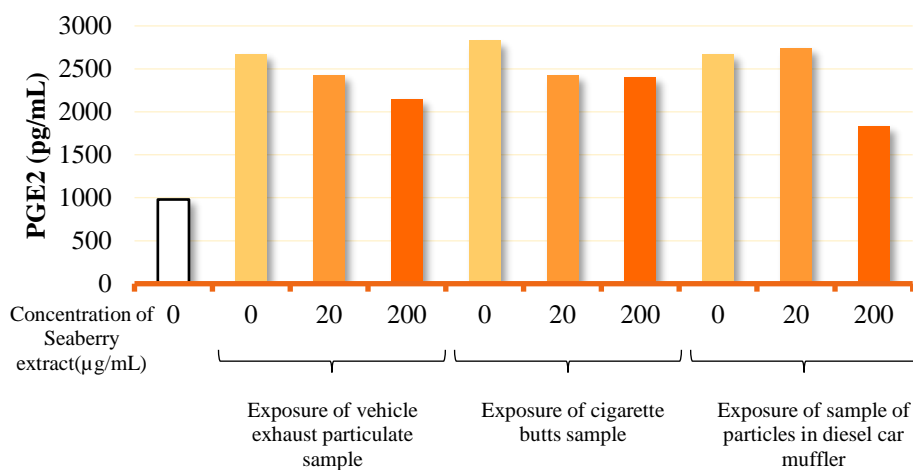


Fig. 9 : Effect of inhibit against PGE2 production by exposure of air pollutants

5-3 Effect to Reduce/Inhibit Irritation from Dryness

Dryness is a well-known factor that damages the skin. Even in summer, we are exposed to dryness when we are in an air-conditioned room. When the skin gets dry, the corneum's barrier is destroyed, which irritates the skin and causes inflammation⁽¹¹⁾. Moreover, since a destroyed corneum loses its barrier function, moisture evaporates and microorganisms, air pollutants, dust, and other foreign matter enter the body through gaps between corneocytes. This may worsen inflammation. We evaluated Seaberry extract's effects to protect against dryness-caused irritation.

Sample

- Seaberry extract

Extract of dried seaberry fruit. The amount 200 to 400 µg/mL is equivalent to cosmeHerbest™ SEABERRY 2.5 to 5.0 %.

Method

Three-dimensional culture epidermis models were cultivated for one day, seaberry extract was adjusted to 200 or 400 µg/mL, and 50 µL samples were applied to the epidermis models. Water was applied to the dryness model. Epidermis models were dried and cultivated for one day. The culture media were collected, and the interleukin-1α (IL-1α) concentration in the media was measured. IL-1α is an intercellular messenger produced from leukocytes. It controls inflammatory reactions in local areas and the entire body. So, measurement of IL-1α provides an index of inflammation.

Result

When three-dimensional culture epidermis models were dried, the concentration of IL-1α (an intercellular messenger that controls inflammatory reactions) increased. The test clarified that the addition of seaberry extract inhibits the increase of IL-1α concentration (Fig. 10). According to the results, seaberry extract is expected to have an action to reduce or inhibit irritation caused dryness or moisturize the skin.

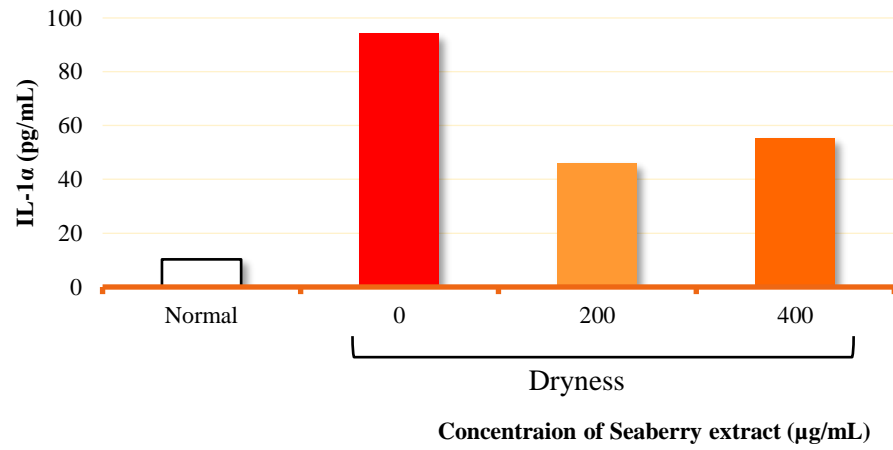


Fig. 10 : Effect of inhibit against IL-1α production by exposure of dryness

5-4 Human Monitor Test (Moisture Retention Durability)

The test results above suggested that seaberry extract may perform an effect to reduce or inhibit irritation caused dryness. A human monitor test was then conducted on cosmeHerbest™ SEABERRY to test its moisture retention durability.

Sample

- Lotion containing cosmeHerbest™ SEABERRY
30 % propanediol solution containing 3 % cosmeHerbest™ SEABERRY
- Control lotion
30 % propanediol solution

Method

The test was carried on five male subjects who submitted a written agreement. Lotion containing cosmeHerbest™ SEABERRY was applied on their left cheek and the control solution was applied on their right cheek (Fig. 11). Moisture value was measured before application and 8 hours after application. Measurement was performed at 23 °C and 40 % humidity after 10 minutes of conditioning.

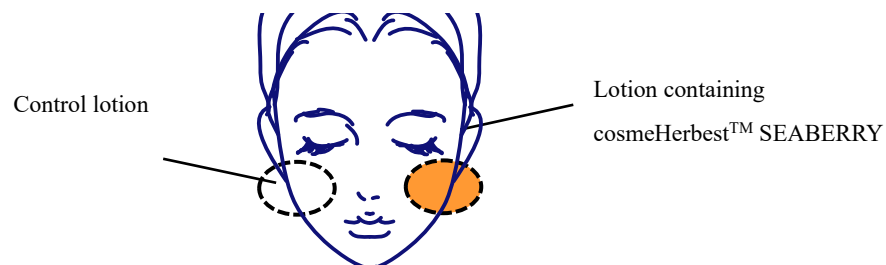


Fig. 11 : Method of human monitor

Result

When the moisture value before application was 1, the moisture value increased on the side that the lotion containing cosmeHerbest™ SEABERRY was applied 8 hours after as compared to the side that the control was applied (Fig. 12). This suggests that cosmeHerbest™ SEABERRY has an effect to keep the skin moist for a long time.

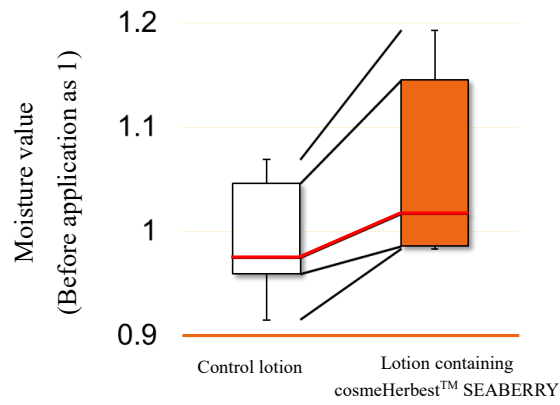


Fig. 12 : Effect of moisture retention by application cosmeHerbest™ SEABERRY (after 8 hours)

5-5 Human Monitor Test (Improvement of Skin Roughness)

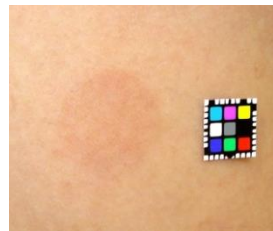
Seaberry Extract was confirmed that has the effect to reduce and inhibit inflammation caused by air pollutants and dryness. It is expected to have the effect against inflammation and rough skin caused by stimulus. It was carried out human monitor test using cosmeHerbestTM SEABERRY, evaluate improvement of skin roughness.

Sample

- cosmeHerbestTM SEABERRY
- 30% 1,3-Propanediol solution

Method

The test was carried on ten male subjects who submitted a written agreement. Each subject was created rough skin model on both arms by application 10% SDS solution for 2 hours. As test start after 2 days, the subject applied cosmeHerbestTM SEABERRY on the left arm, 30% 1,3-propanediol solution on the right arms once a day for 4 days. Trans epidermal water loss (TEWL) was measured every day. Measurement was performed in a room where temperature was regulated at 26 °C and humidity in 30 to 35 %.



Appearance

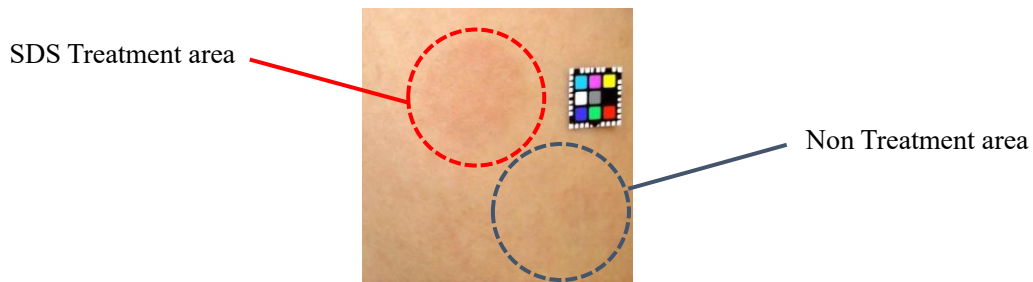


Microscope image

Fig. 13 : Created rough skin model by 10%SDS solution

Result

The data was used TEWL (“SDS Treatment area” – “Non-treatment area”). When the TEWL before application was 1, it was compared the TEWL after application. It was clear that cosmeHerbestTM SEABERRY application significantly reduced TEWL than 30% 1,3-propanediol application. When the skin was damaged by SDS, TEWL of the rough skin was high. In other words, decrease of TEWL is expected that the rough skin was improved. As the conclusion, cosmeHerbestTM SEABERRY is expected to have an improvement effect of rough skin caused by SDS.



Supplementation : TEWL increase of rough skin = “SDS Treatment area” – “Non-treatment area”

TEWL after application (as 1 before application)		
	30% 1,3-propanediol	cosmeHerbest™ SEABERRY
S.O. (50) M	0.46	-0.41
N.S. (27) M	0.22	0.17
S.T. (25) M	0.17	0.03
K.T. (26) M	0.17	0.03
Y.F. (28) M	-0.32	-0.13
K.I. (26) M	0.31	0.06
Y.S. (25) M	0.26	-0.07
M.O. (29) M	0.39	-0.06
H.N. (31) M	0.49	0.08
Mean±SE	0.24±0.08	-0.03±0.06

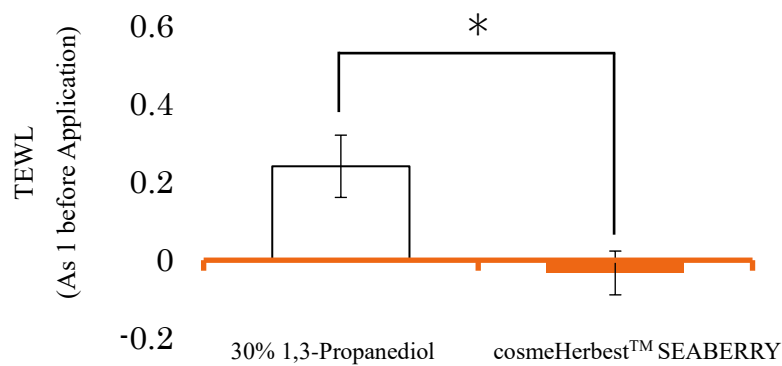


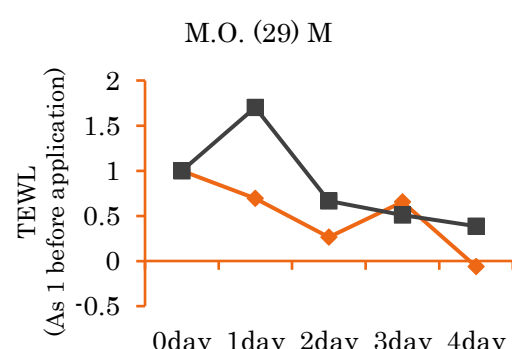
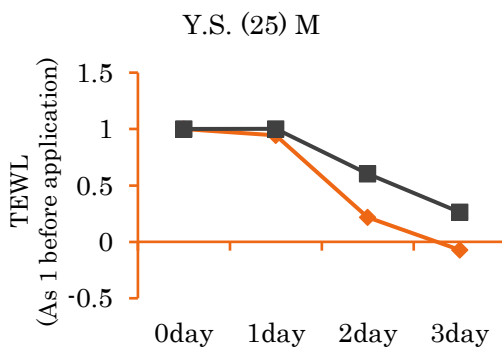
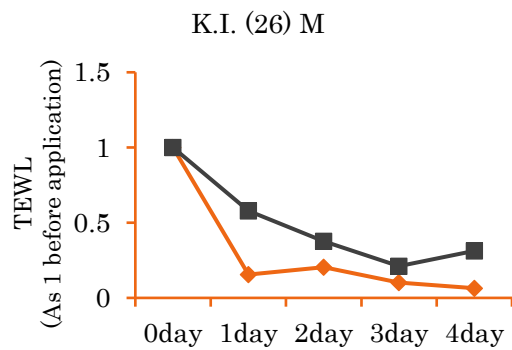
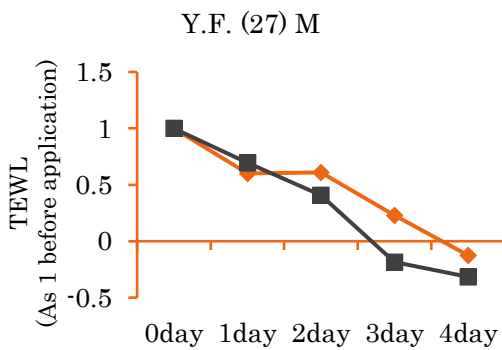
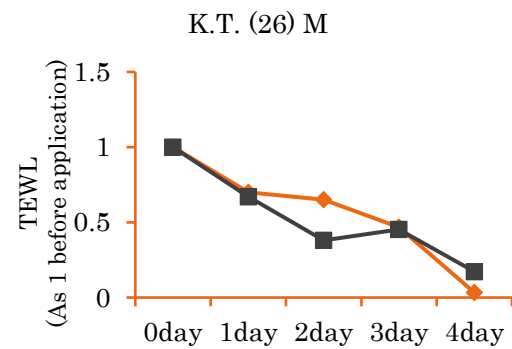
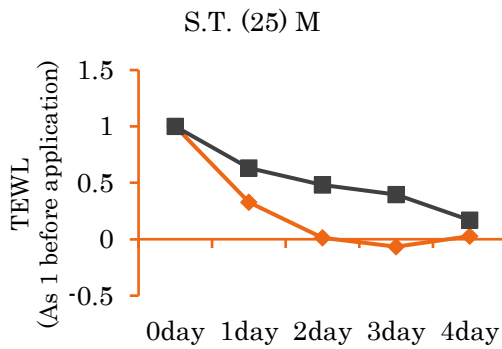
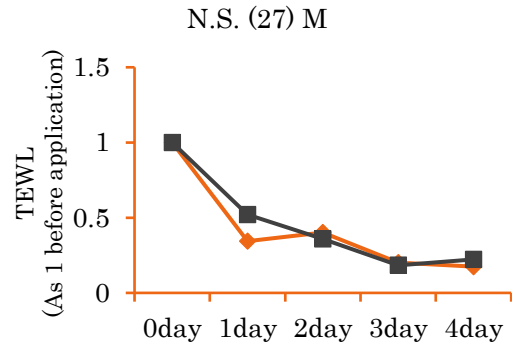
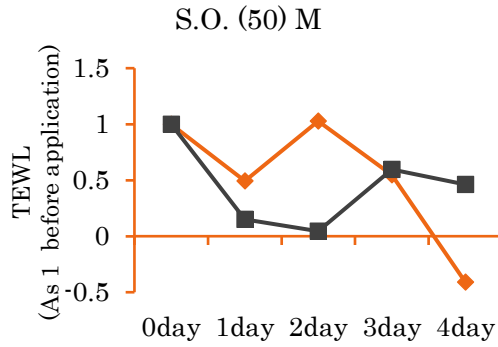
Fig. 14 : Comparison of average TEWL after application (n=9, * p<0.05)

Supplementation : TEWL = “SDS treatment area” – “Non-treatment area”

Near 0 shows that there is no difference between normal skin and rough skin.

30% Propanediol solution

cosmeHerbest™ SEABERRY



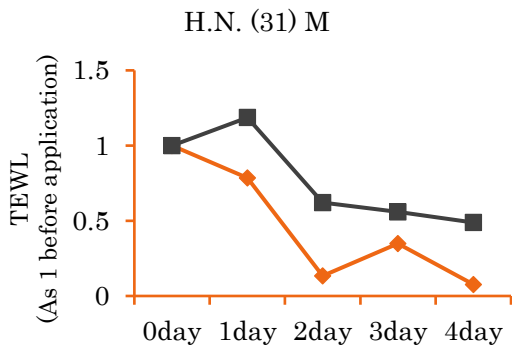


Fig. 15 : Change of TEWL on rough skin

Supplementation : TEWL = “SDS treatment area” – “Non-treatment area”

Near 0 shows that there is no difference between normal skin and rough skin.

6. Stability Test

6-1 Long Term Stability Test

Store cosmeHerbest™ SEABERRY as it was, in a cool dark place at 4°C, room temperature, window side and at 40°C (in incubator) and observed color change and determined the absorbance for 3 months.

Method

Store cosmeHerbest™ SEABERRY as it was in appointed places and observed color change and determined the absorbance at 450 nm.

Result and Consideration

The test results have been a little rising absorbance at cool dark at 4°C, room temperature, at 40°C for 3 months. But color of store at window side has changed significantly. (Fig. 16)

Please store away from direct sunshine, window side etc.

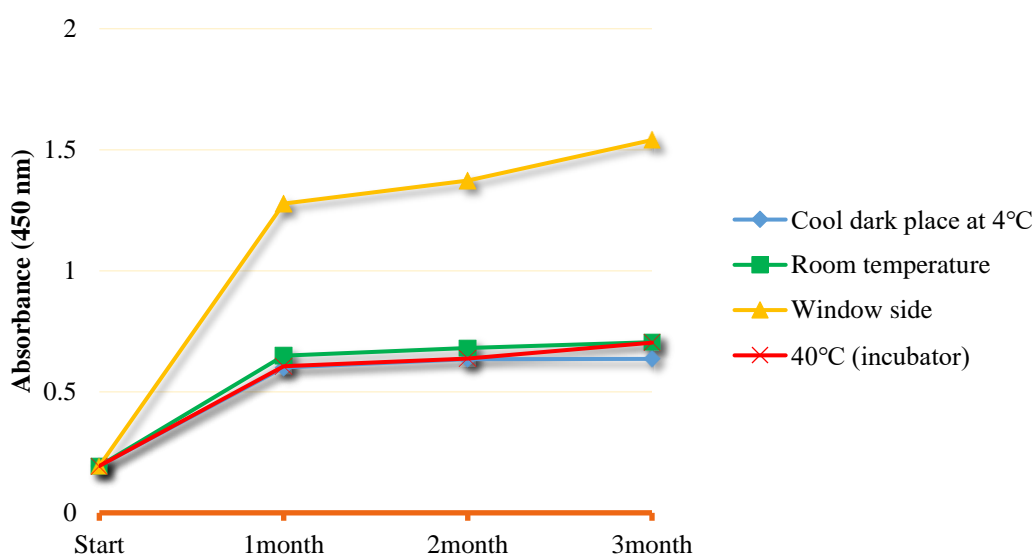


Fig. 16 : Long term stability test of cosmeHerbest™ SEABERRY

6-2 pH Stability Test

pH of cosmeHerbest™ SEABERRY was adjusted from 3 to 12, observed the color change and determined the absorbance.

Method

pH of cosmeHerbest™ SEABERRY was adjusted from 3 to 12 by hydrochloric acid and sodium hydroxide, observed the color change and determined the absorbance at 450 nm.

Result and Consideration

The color from acidic, weakly acidic, and until the neutral zone is a stable. And color was stable and unchanged the color tone, but the color tone darkish in the alkaline side. (Fig. 17) Turbid and precipitates could not be confirmed.

Please use in the neutral zone from the acidic side.

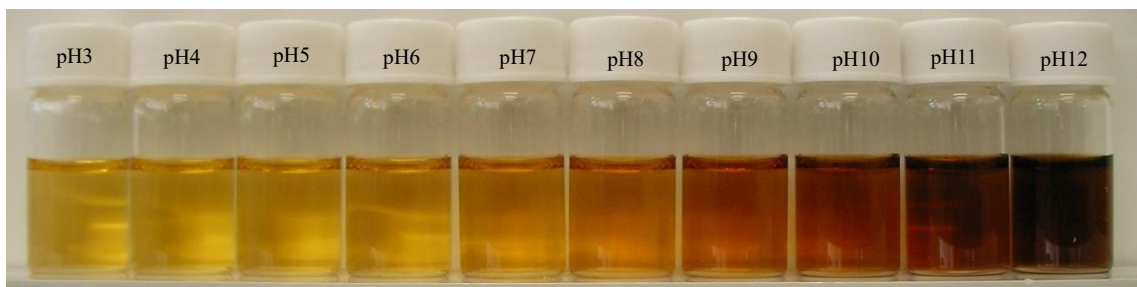
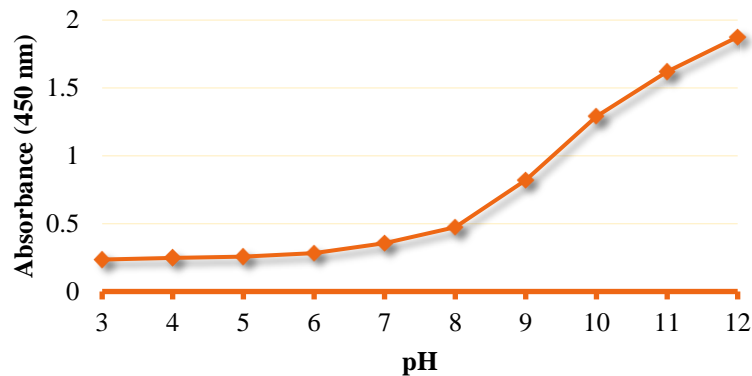


Fig. 17 : pH stability test of cosmeHerbest™ SEABERRY

6-3 Thermal Stability Test

cosmeHerbest™ SEABERRY heat at 90°C for 8 hours and observed the color change and determined the absorbance.

Method

Adjust 10% concentration of cosmeHerbest™ SEABERRY with purified water and heat on a water bath at 90°C for 8 hours and observed the color change and determined the absorbance at 450 nm.

Result and Consideration

10% aqueous solution of cosmeHerbest™ SEABERRY was heated for 8 hours at 90°C, the color tone did change a little dark color. (Fig. 18) Turbid and precipitates could not be confirmed.

Please do not heat for long time.

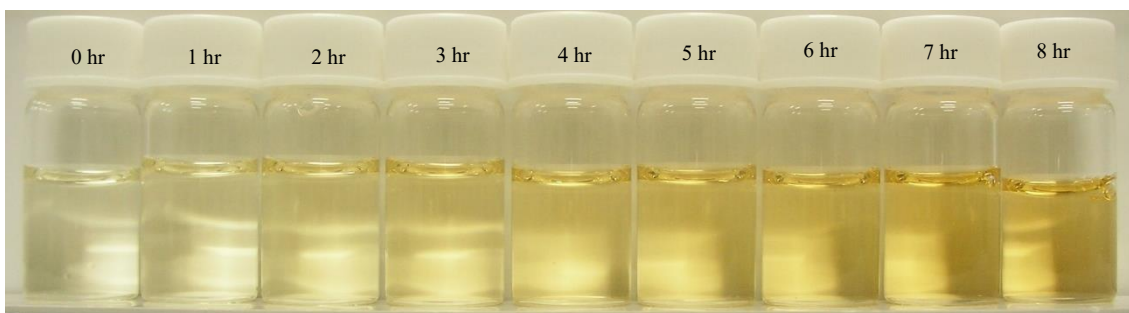
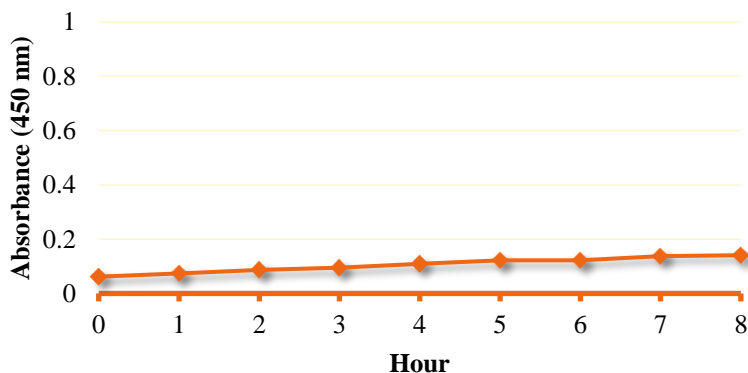


Fig. 18 : Thermal stability test of cosmeHerbest™ SEABERRY

7. Compatibility Test

Method

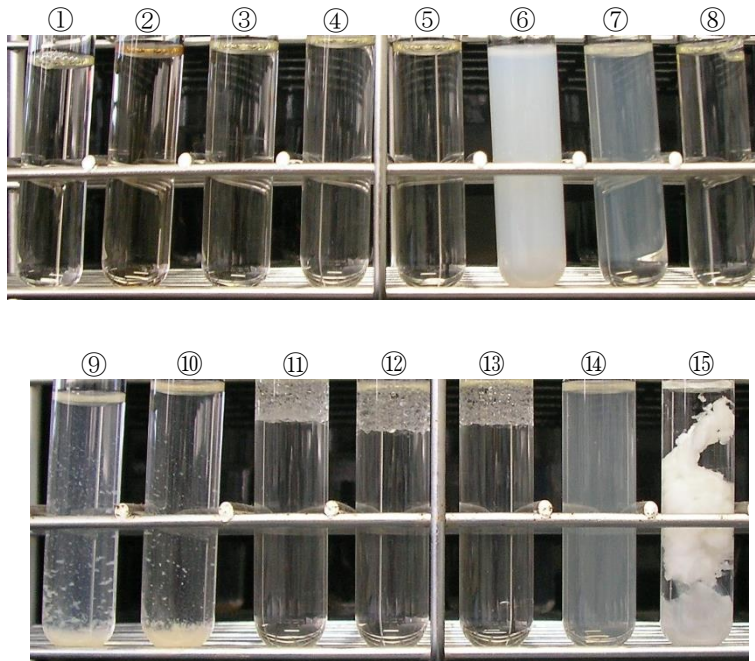
cosmeHerbest™ SEABERRY was adjusted to 10% concentration. Other products were adjusted to the concentration in the table with purified water, mixed cosmeHerbest™ SEABERRY and other ingredients, observe the compatibility at 1 hour and 24 hours after mixing.

Result

(○ : Clear, △ : Turbid, × : Precipitate)

	(%)	Trade Name	INCI Name	Result	
		Manufacturer		1hr	24hr
Cation	3.0	①QUARTAMIN 86W Kao Corporation	Steartrimonium Chloride / Water	○	○
		②SOYPON SLE Kawaken Fine Chemical Co., Ltd.	Sodium Lauroyl sarcosinate	○	○
Anion	10.0	③EMAL 20C Kao Corporation	Sodium Laureth Sulfate / Water	○	○
	10.0	④AMISOFT CT-12S Ajinomoto Co., Inc.	Water / TEA-Cocoyl Glutamate	○	○
	10.0	⑤PYROTER GPI-25 Nihon Emulsion Co., Ltd.	Glycereth-25 PCA Isostearate	○	○
Nonion	10.0	⑥SALACOS PG-218 Nisshin Oilio Group Co., Ltd.	Polyglyceryl-10 Dioleate / Tocopherol	×	×
	10.0	⑦RHEODOL 460V Kao Corporation	Sorbeth-60 Tetraoleate	△	△
	10.0	⑧RHEODOL TW-0120V Kao Corporation	Polysorbate 80	○	○
	10.0	⑨AMPHITOL 20AB Kao Corporation	Lauramidopropyl Betaine	△	×
Amphoteric	5.0	⑩SOFTAZOLINE LSB 29% aq. Kawaken Fine Chemical Co., Ltd.	Lauramidopropyl Hydroxysulfate	△	×
	10.0	⑪KF-96A-10CS Shin-Etsu Chemical Co., Ltd.	Dimethicone	×	×
Silicone	10.0	⑫KF-96A-300CS Shin-Etsu Chemical Co., Ltd.	Dimethicone	×	×
	10.0	⑬KF-995 Shin-Etsu Chemical Co., Ltd.	Cyclopentasiloxane	×	×
	10.0	⑭Silwet L-7604 Momentive Performance Materials	PEG-8 Dimethicone	△	×
	10.0	⑮Silwet L-7622 Momentive Performance Materials	PEG-8 Dimethicone	×	×
	10.0				

Compatibility test (after 24 hours)



Other ingredients

Cation	①QUARTAMIN 86W	Amphoteric	⑨AMPHITOL 20AB
Anion	②SOYPON SLE		⑩SOFTAZOLINE LSB
	③EMAL 20C	Silicone	⑪KF-96A-10CS
④AMISOFT CT-12S	⑫KF-96A-300CS		
Nonion	⑤PYROTER GPI-25		⑬KF-995
	⑥SALACOS PG-218		⑭Silwet L-7604
	⑦RHEODOL 460V		⑮Silwet L-7622
	⑧RHEODOL TW-0120V		

8. Toxicological Safety Test

Trade Name	cosmeHerbest™ SEABERRY	
Safety Test Items	Test Result	Test Method
Primary Skin Irritation Test	No Irritation	EpiSkin™ Method
Accumulated Skin Irritancy Test	Not Performed	—
Sensitization Test	Not Performed	—
Photo Toxicity Test	Not Performed	—
Photo Sensitization Test	Not Performed	—
Eye Irritation Test	No Irritation	SkinEthic™ HCE Method
Mutagenicity Test	Negative	Ames Test (TA98、TA100) As solid of seaberry extract
Human Patch Test	Judgement for 72 hours —(11)、±(1)	Closed Patch Test (48 hours)

9. Recommended Applications

Beauty Cosmetics

- Lotion
- Body gel

Recommended Dosage

0.125~5.0%

10. Product Specifications

Trade Name	cosmeHerbest™ SEABERRY	
Description		
· Color	Pale reddish orange to reddish-yellow brown clear liquid	
· Odor	Characteristic Odor	
Identification		
· Polyphenol	Positive	
· Sugar	Positive	
pH	3.0~4.5	
Purity Test		
1) Heavy Metals	20 ppm max.	
2) Arsenic	2 ppm max.	
Microbial Test		
1) Bacterial Count	1×10^2 /g max.	Hygiene Test
2) Fungi, Mold Count	1×10^2 /g max.	Hygiene Test
3) E. Coli Form	Negative	Hygiene Test

These standards and test method are referred to General Notices and General Tests, Processes and Apparatus of The Japanese Standards of Quasi-drug Ingredients, unless otherwise specified.

11. Labelling Name

JP Labelling Name	:	水 プロパンジオール ヒポファエラムノイデス果実エキス
JP Quasi-drug Name	:	None
INCI Name	:	Water Propanediol Hippophae Rhamnoides Fruit Extract
已使用化粧品原料名称目录 (IECIC2021)	:	水 1,3-丙二醇 沙棘(HIPPOPHAE RHAMNOIDES)果提取物

12. Others

12-1 Packaging

1 kg PE Bottle、 5 kg PE Cubic container Outer : Carton box

12-2 Shelf Life and Storage Conditions

Avoid high temperature and humidity, and store in cool, dry and dark place.

13. Reference

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From product planning to OEM

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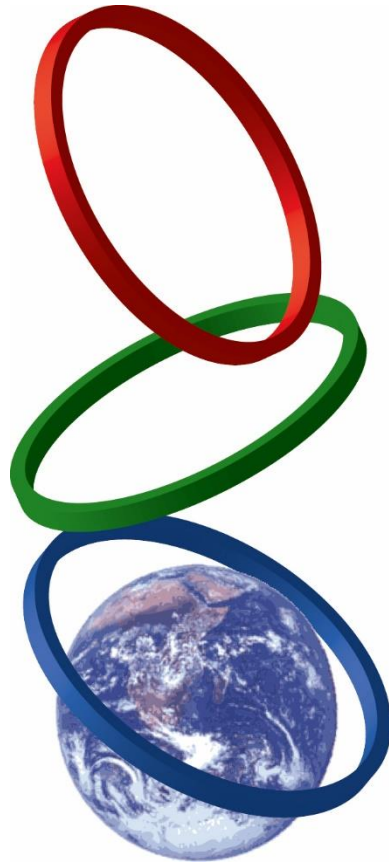
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