

# ★ About FRU+sh :



## ◆FRU+sh : Liquid Formulation : DeoSuper GE-1

Made in Japan, 100% natural plant-derived products

Disinfection, inhibit virus, antivirus, deodorization

⇒ Natural plant enzyme and grapefruits seed extract realizes high performance of disinfection, inhibit virus, antivirus and deodorization.

⇒ Watery smooth texture

⇒ Not only for disinfecting your hands, but for chairs, tables, smartphones, wallets, living rooms, offices, stores. No odor and low volatility, excellent sustainability.

★Not use chemical components or alcohol, so usable safely for children and pets.

# ■ FRU+sh : Chief Component



★GSE (Grapefruits Seed Extract) Grapefruits Seeds: Inhibit bacteria ※Food additive  
Extracted from grapefruit seeds

Known as a "natural antibiotic", it safely kills viruses and bacteria. Discovered in 1976, it has been used to fight numerous viruses due to its high antibacterial activity. It is especially used in the States and is widely used not only as a disinfectant for hospitals, clinics, and homes, but mixed with drinks and as a supplement with high antioxidant activity. In Japan, it is also used and sold as a food additive such as preservatives as well as disinfectants.

★Natural plants enzyme (Deodorant ※ fruits products)

We use enzymes extracted from 42 kinds of tropical fruits such as mango, pineapple and noni, which are used in many deodorants in Japan.

★Grain extract

It contains the characteristic of protecting itself from bacteria and viruses.

# FRU+sh Anti-virus effect

## ① Toxicity Result

It is a cell line adopted by biomedical investigation as well as it is also used for cellular organisms such as cell polarity, cell-cell adhesion , collective cell movement, growth factor.

In both Madin-Darby Canine Kidney cells and Crandell-Rees Feline Kidney cells, it is recognized effective at 10x thinning of Deo Super GE-1

## ② Anti-Virus Test 【Infectivity titer: TCID<sub>50</sub>/ml】

|                           | Flu virus                    | Feline calicivirus (Norovirus) |
|---------------------------|------------------------------|--------------------------------|
|                           | Fall below measurable limits | 2.0E+03                        |
| Phosphate buffered saline | 6.6E+07                      | 2.3E+07                        |
| Deo Super GE-1            | 2.5E+03                      | <2.0E+03                       |

## 【Activity Value 】

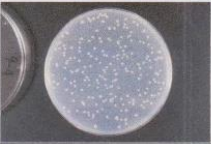
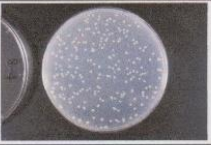
|                           | Flu virus                 | Feline calicivirus (Norovirus) |
|---------------------------|---------------------------|--------------------------------|
| Phosphate buffered saline | —                         | —                              |
| Deo Super GE-1            | 4.4 Inactivation: 99.994% | 4.1 Inactivation: 99.991%      |

# ■ FRU+sh Bacteria inhibit effect

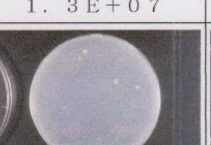
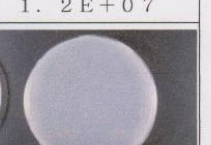
| Aerobic plate count (cfu/ml)                         |                |          | Antibacterial activity             |                                         |
|------------------------------------------------------|----------------|----------|------------------------------------|-----------------------------------------|
|                                                      | 5 min          | 10 min   | 5 min                              | 10 min                                  |
|                                                      | <b>Default</b> |          | Infectivity titer<br>(TCID 50 /ml) | Fall below measurable<br>limits 1.0E+01 |
| ① <b>Staphylococcus aureus</b>                       | 1.6E+07        | 1.7E+07  |                                    |                                         |
| Phosphate buffered saline                            | 1.0E+01        | 1.5E+07  | -                                  | -                                       |
| Deo Super GE-1                                       |                | 1.0E+01  | 6.2 Inactivation: 99.99992%        | 6.1 Inactivation: 99.99991%             |
| ② <b>Bacillus coli</b>                               | <b>Default</b> | 2.2E+07  |                                    |                                         |
| Phosphate buffered saline                            | 2.3E+07        | 2.1E+07  | -                                  | -                                       |
| Deo Super GE-1                                       | 1.0E+01        | <1.0E+01 | 6.3 Inactivation: 99.99993%        | 6.3 Inactivation:99.99993%              |
| ③ <b>Methicillin-resistant Staphylococcus aureus</b> | <b>Default</b> | 4.3E+06  |                                    |                                         |
| Phosphate buffered saline                            | 3.9E+07        | 3.1E+07  | -                                  | -                                       |
| Deo Super GE-1                                       | 1.0E+01        | <1.0E+01 | 5.5 Inactivation: 99.9995%         | 5.4 Inactivation: 99.9994%              |
| ④ <b>Blue pus</b>                                    | <b>Default</b> | 1.2E+07  |                                    |                                         |
| Phosphate buffered saline                            | 1.3E+07        | 1.2E+07  | —                                  | —                                       |
| Deo Super GE-1                                       | 5.2E+01        | <1.0E+01 | 4.3 Inactivation:99.993%           | 6.0 Inactivation: 99.99990%             |

# FRU+sh Bacteria inhibit effect

Test process of bacterial inhibition No.1 Date of test: 2018/11/22

|    |                                 | 0 minutes                                                                           | after 5 minutes                                                                     | after 60 minutes                                                                     |
|----|---------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| EC | phosphate buffered saline [PBS] |    |    |    |
|    |                                 | 2. 2E+07                                                                            | 2. 3E+074                                                                           | 2. 1E+07                                                                             |
|    | DeoSuper GE-1                   |    |    |    |
|    | 1st time                        | —                                                                                   | 1. 0E+01                                                                            | <1. 0E+01                                                                            |
|    |                                 |    |    |    |
|    | 2nd time                        | —                                                                                   | 1. 0E+01                                                                            | <1. 0E+01                                                                            |
| SA | phosphate buffered saline [PBS] |    |    |    |
|    |                                 | 1. 2E+07                                                                            | 1. 3E+07                                                                            | 1. 2E+07                                                                             |
|    | DeoSuper GE-1                   |  |  |  |
|    | 1st time                        | —                                                                                   | 6. 3E+02                                                                            | <1. 0E+01                                                                            |
|    |                                 |  |  |  |
|    | 2nd time                        | —                                                                                   | 4. 1E+02                                                                            | <1. 0E+01                                                                            |

Test process of bacterial inhibition No.2 Date of test: 2018/11/22

|      |                                 | 0 minutes                                                                             | after 5 minutes                                                                       | after 60 minutes                                                                      |
|------|---------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| MRSA | phosphate buffered saline [PBS] |    |    |    |
|      |                                 | 4. 3E+06                                                                              | 3. 9E+06                                                                              | 3. 1E+06                                                                              |
|      | DeoSuper GE-1                   |    |    |    |
|      | 1st time                        | —                                                                                     | 1. 0E+01                                                                              | <1. 0E+01                                                                             |
|      |                                 |    |    |    |
|      | 2nd time                        | —                                                                                     | 1. 0E+01                                                                              | <1. 0E+01                                                                             |
| PA   | phosphate buffered saline [PBS] |    |    |    |
|      |                                 | 1. 2E+07                                                                              | 1. 3E+07                                                                              | 1. 2E+07                                                                              |
|      | DeoSuper GE-1                   |  |  |  |
|      | 1st time                        | —                                                                                     | 6. 3E+02                                                                              | <1. 0E+01                                                                             |
|      |                                 |  |  |  |
|      | 2nd time                        | —                                                                                     | 4. 1E+02                                                                              | <1. 0E+01                                                                             |

# FRU+sh Effect of Deodorization

Deodorization test performance of ammonia, trimethylamine, hydrosulfuric

Chart-1 Test result of ammonia (Unit: ppm)

| Sample                | Lapse time (min) |    |    |     |     |
|-----------------------|------------------|----|----|-----|-----|
|                       | 10               | 30 | 60 | 120 | 180 |
| Analyte               | 27               | 19 | 18 | 16  | 15  |
| Confrontation (water) | 40               | 25 | 20 | 20  | 20  |
| Blank value           | 100              | 95 | 87 | 80  | 74  |

Initial gas concentration: approx. 100 ppm

Chart-2 Test result of trimethylamine (Unit: ppm)

| Sample                | Lapse time (min) |    |    |     |     |
|-----------------------|------------------|----|----|-----|-----|
|                       | 10               | 30 | 60 | 120 | 180 |
| Analyte               | 42               | 34 | 33 | 32  | 32  |
| Confrontation (water) | 56               | 48 | 44 | 42  | 42  |
| Blank value           | 70               | 70 | 70 | 70  | 70  |

Initial gas concentration: approx. 70 ppm

Chart-3 Test result of hydrosulfuric (Unit: ppm)

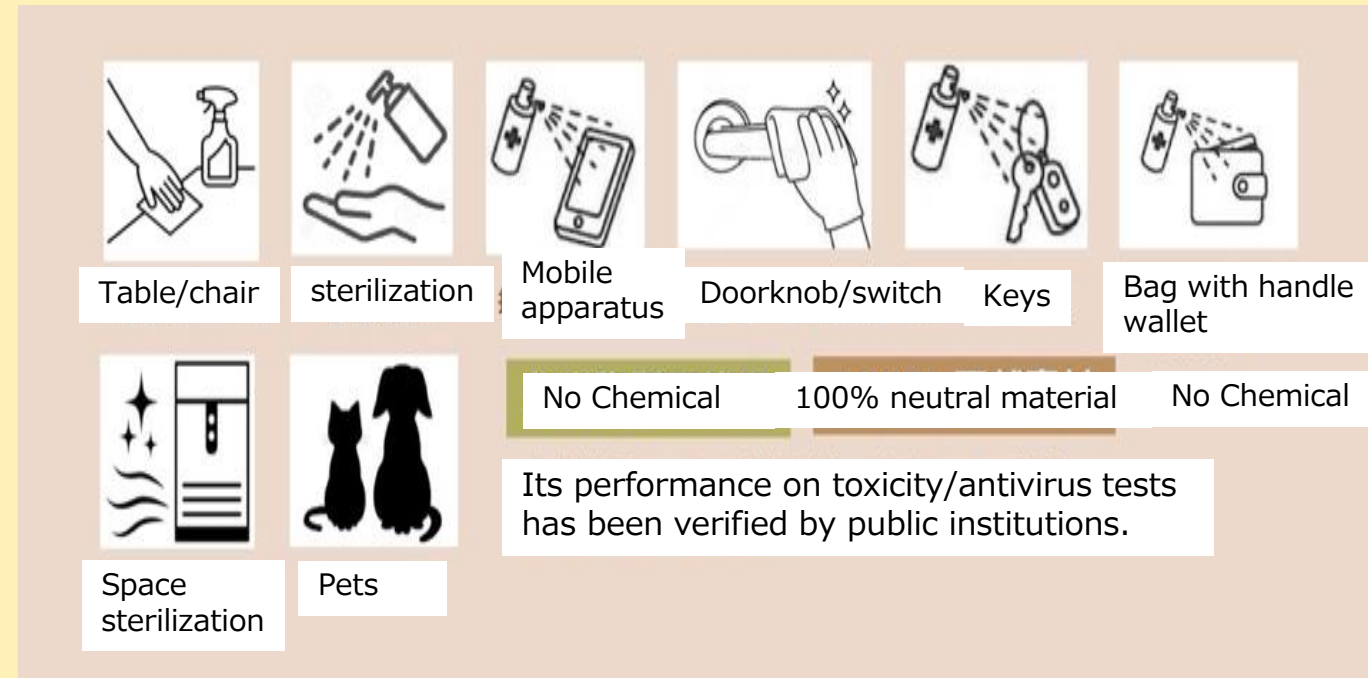
| Sample                | Lapse time (min) |    |    |     |     |
|-----------------------|------------------|----|----|-----|-----|
|                       | 10               | 30 | 60 | 120 | 180 |
| Analyte               | 13               | 11 | 10 | 10  | 10  |
| Confrontation (water) | 20               | 20 | 20 | 20  | 20  |
| Blank value           | 20               | 20 | 20 | 20  | 20  |

Initial gas concentration: approx. 20 ppm

| Odor Gas Type   | Sweat odor   | Odor of old people | Excrement | Tobacco | Raw garbage |
|-----------------|--------------|--------------------|-----------|---------|-------------|
| Ammonia         | ○            | ○                  | ◎Urine    | ○       | ○           |
| Acetic acid     | ◎stuffy feet | ○                  | ○         | ○       |             |
| Isovaleric acid | ◎stuffy feet | ○                  |           |         |             |
| Nonenal         |              | ◎                  |           |         |             |
| Methylmercaptan |              |                    | ○         |         | ○           |
| hydrosulfuric   |              |                    | ◎Manure   | ○       | ○           |
| Indole          |              |                    | ○         |         |             |
| acetaldehyde    |              |                    |           | ○       |             |
| viridine        |              |                    |           | ○       |             |
| Tolmethylamine  |              |                    |           |         | ○           |

# ■ FRU+sh Case Study

Seat or carpet of aircraft, train, bus, taxi, community facility, toilet in park, hotel, inns, accommodation facility, hospital, care house, hot spring, sauna, a variety types of amenities



# FRU+sh; Comparison with Alcohol

|                           | FRU+sh                     | Alcohol                                   |
|---------------------------|----------------------------|-------------------------------------------|
| Bacteria Removable Effect | ◎                          | △<br>No effect against a partial bacteria |
| Bacteria Inhibit Effect   | ◎                          | ×                                         |
| Odor Eliminating          | ◎                          | ×                                         |
| Space Sterilization       | ◎<br>Installment available | ×                                         |
| Wet Place                 | ◎                          | ×                                         |
| Impact against Virus      | ◎                          | △<br>No effect against a partial bacteria |
| preservability            | ◎                          | ○                                         |
| Deterioration of Quality  | A Few Shelf-Stable         | Oxidized and change into aldehyde         |
| Odor                      | Odor-Free                  | Volatile pungent odor                     |
| Toxicity                  | Null                       | Affect to skin                            |
| Burnability               | Null                       | No Fires                                  |