

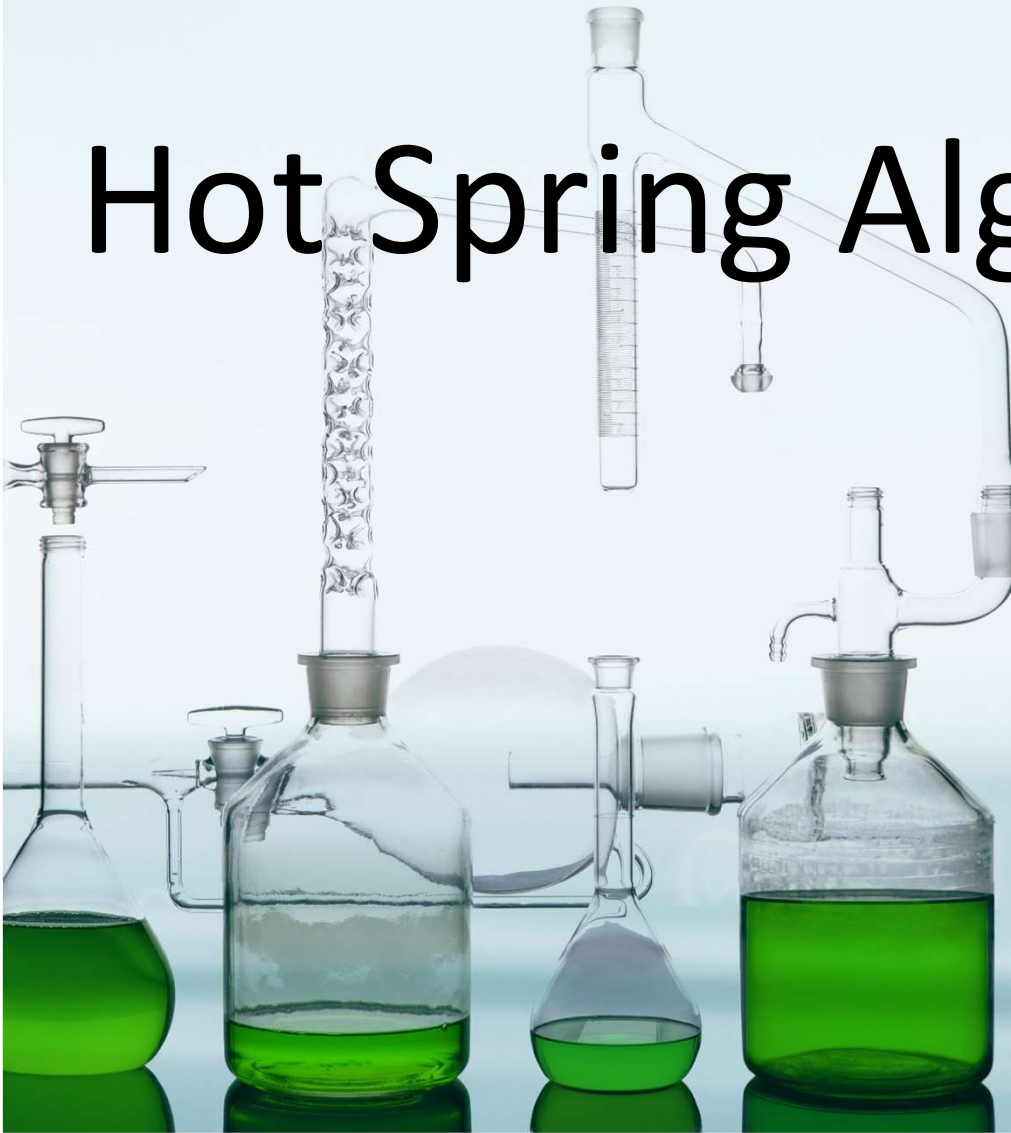
# Revolution in The Aquaculture Industry

## Hot Spring Algae RG92®

Reduce mortality rate • Promote growth



Increase production



## What is RG92 extract?

### Ingredients derived from hot spring algae

RG92 extract is a component extracted from algae that live in hot springs. The specific glycolipid DGDG contained in the ingredients activates the natural immunity of farmed fish. Farming using natural RG92 extracts can greatly reduce the economic burden on fishery industry, such as losses due to antibiotic administration and death. Fish farming using natural RG92 extracts can greatly reduce the economic burden on fishery industry, such as losses due to antibiotic administration and death.

It can also meet consumer expectations for safe food, such as no concerns about residual drugs and improved taste.

Infiltrate the bait pellets that you normally use with a mixture of RG92 extract and water, and feed once a day. In the study at Saeki, the flounder gained approximately 1.3 times more weight than the one fed only with pellets. Moreover, the yield was 40% last year, but this year we achieved 90%. We found that immune-related factors were activated, and the amount of mucus in the skin increased by about 2 times inside the flounders fed with RG92 extract. It is thought that "flounder with zero deaths" was created by strengthening defense functions against bacteria and viruses.

Currently, we are verifying the effect of this extract on various high-end fish species such as tiger puffer and striped jack by collaborating with aquaculture companies and universities. The growth-promoting effect is beginning to appear in these fish species. Therefore, RG92 extract appears to improve seedling health of various fish species. We are also applying it to crustaceans such as shrimp and livestock. We are confident that we can contribute to providing highly productive and healthy food.

# Product Information of RG92 Extract 20mℓ

## ■ Ingredients

Green algae extract

## ■ About safety

- This product is 100% plant-based and chemical-free
- This product has been confirmed to be non-toxic in Ames test by Food and Drug Safety Center

## ■ How to use

- Dilute the extract to a magnification corresponding to the weight of the farmed fish (1 million to 7 million times) and fed together with the feed once a day during the breeding period. (7 million times for flounder)
- One blackout bottle 20mℓ

## ■ Attention

- It is a highly volatile component. Please cap and seal immediately after use.
- It will discolor when exposed to sunlight since this product is an algae extract. Store in a dark place away from direct sunlight.
- Please use up as soon as possible after opening. (within a year)
- This product has been developed for use as a feed additive in aquaculture.



# RG92<sup>®</sup> = Extremophile

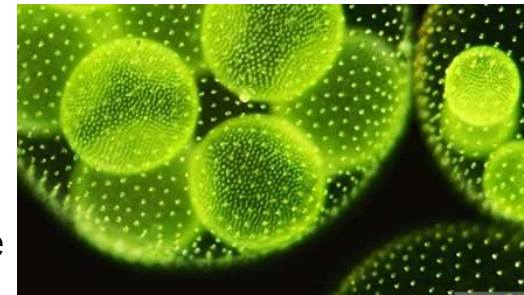
Hot spring algae is a miraculous microorganism created by Japanese biotechnology.

It was discovered from the hot spring water of Beppu Onsen, the best hot spring in the world.

It is an extremophile that can be harvested from only 5g of hot springs equivalent to 4 cups of Tokyo Dome.

It has 100% natural ingredients, patented in 2015 and certified by Ecocert.

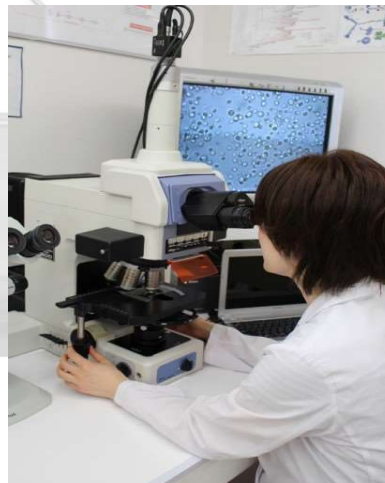
The establishment of high-speed culture technology has made it possible to provide materials as RG92 extract.



①Collection of microorganisms



②Identification of microorganisms



③Establishment of manufacturing system



# 5 Test Results of RG92 Extract

## Suppression of death

In the flounder test, 0 collapsed deaths were recorded from the start of RG92 extract administration in March until July when the water temperature rises.

## Increase body weight

After the test started in March, we found that the body weight increased in one month. After a 10-month cultivation period, the weight kept increasing steadily. The impact of the typhoon damage (hypoxia, no feeding and red tide) in September was small, and in October, the weight gain rate was restored.

## Reduce diseases

Although death from gliding bacteria, *Edwardsiella tarda*, was confirmed from late July to early September, the number remained at less than half compared to the control plot.

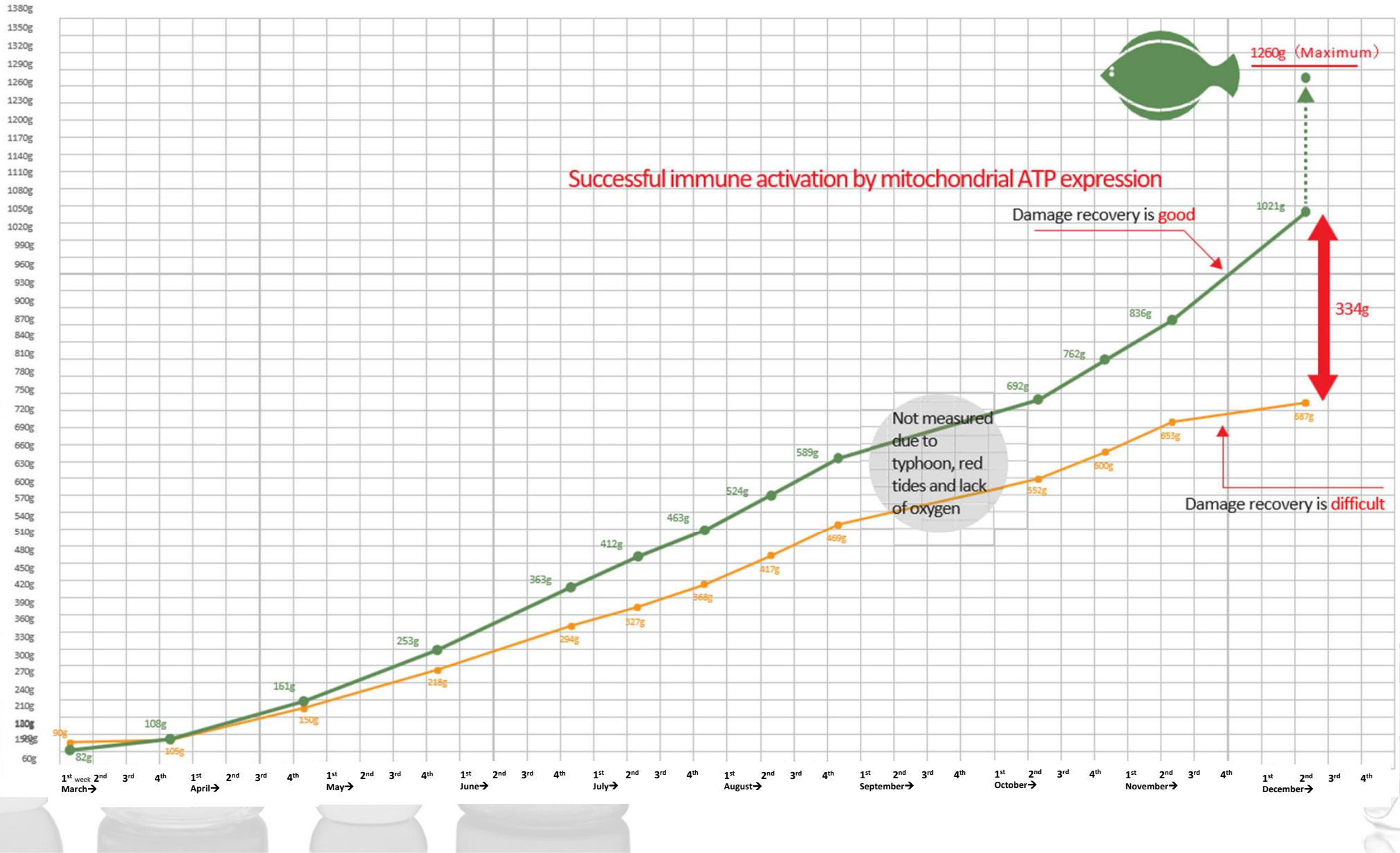
## Reduce nutrients

RG92 extract plot was tested with no nutrient added, and the control plot was tested with nutrient added. The result showed that the mortality rate was lower and the weight gain rate was higher in RG92 extract plot than the control plot.

## Safety

RG92 extract is 100% naturally derived. The extract has originally passed toxicity tests for humans, therefore there is no problem to feed fish with it, and there is no toxicity for humans if they eat those fish.

# ■ RG92 Extract Feeding Test (Changes in fish weight)



# Growth promotion and immune function enhancement with RG extract

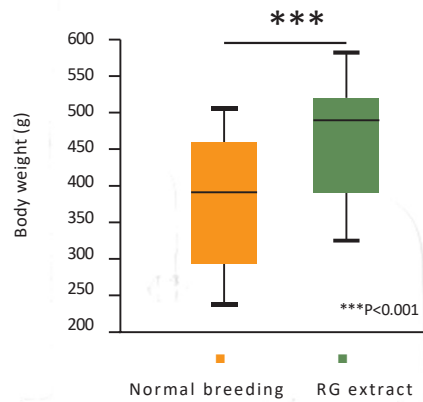
## Average weight comparison (adult fish)

Randomly weigh 20 fish each

Number of fish	Normal breeding	RG extract
1	241g	316g
2	251g	351g
3	255g	361g
4	264g	381g
5	271g	388g
6	306g	408g
7	316g	434g
8	322g	454g
9	353g	465g
10	361g	485g
11	389g	495g
12	391g	496g
13	392g	<b>502g</b>
14	414g	<b>504g</b>
15	443g	<b>508g</b>
16	456g	<b>509g</b>
17	458g	<b>513g</b>
18	471g	<b>523g</b>
19	476g	<b>572g</b>
20	<b>501g</b>	<b>584g</b>
Average ±Standard reor	367±19.0g	463±16.5g
Weight gain rate		RG extract <b>157%UP</b>

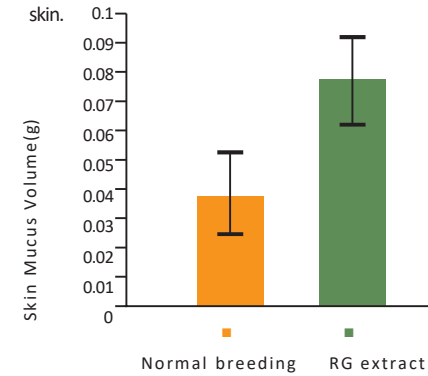
## Significant body weight comparison with RG extract administration (adult fish)

As a result of statistical analysis of the weight of each 20 adult fish near shipment, a significant growth-promoting effect ( $p < 0.001$ ) was shown by RG92 extract feeding.



## Comparison of skin mucus volume (mucin) after administration of RG92 extract

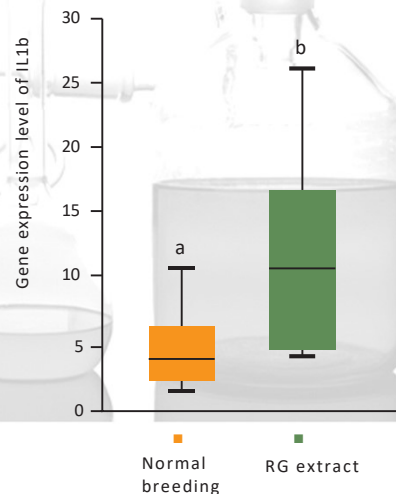
When mucus was scraped from a certain area of skin and weighed, an increase in mucus secretion was observed due to the RG extract. It was suggested that the RG extract strengthens the defense mechanism against invaders from the



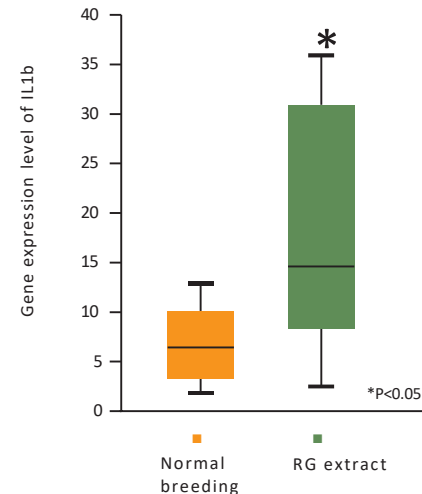
## Comparison of immune expression level by RG extract administration

In the intestine and kidney of flounder fed with RG extract, gene expression level of interleukin (IL1b) is significantly increased. It was suggested that RG extract activates innate immunity and strengthens the defense function against invaders such as bacteria and viruses.

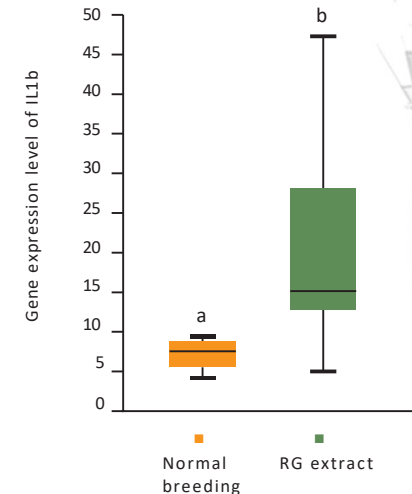
### Intestine (young fish)



### Kidney (adult fish)



### Kidney (young fish)



# How to Use RG92 Extract

## How to use RG92 extract in Japan

Infiltrate the bait pellets (Extruded Pellets=EP Moist Pellets=MP Dry Pellets=DP  
'') with RG92 extract. **Do not use antibiotics.**



1. Calculate the amount to use RG92 from the RG92 formula.

2. Put water in 500ml and 1,000ml plastic bottles and then mix the amount of RG92 calculated from the formula into those plastic bottles. (Drip with the attached dropper.)

3. Infiltrate the pellets in pelleting machines or containers with that water.

4. Feed it to target farmed fish once a day.





RG92 has been shown to have anti-inflammatory properties

RG92® is 100% natural ingredients certified by Ecocert

**特許証**  
(CERTIFICATE OF PATENT)

特許第5676702号  
(PATENT NUMBER)

発明の名称  
(TITLE OF THE INVENTION) 藻類体から抽出したエキスを含む組成物、及び化粧用組成物、炎症性疾患の治療・予防薬、並びに新規微生物

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発明者  
(INVENTOR) 加世田 国与士  
松島 一幸

出願番号  
(APPLICATION NUMBER) 特願2013-167377

出願日  
(FILING DATE) 平成25年 8月12日(August 12, 2013)

登録日  
(REGISTRATION DATE) 平成27年 1月 9日(January 9, 2015)

この発明は、特許するものと確定し、特許原簿に登録されたことを証する。  
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE JAPAN PATENT OFFICE.)

平成27年 1月 9日(January 9, 2015)

特許庁長官  
(COMMISSIONER, JAPAN PATENT OFFICE) 伊藤 仁

F303(GC)00en Issued the: 26/01/2021 Attestation n°: 1159049

**ECOCERT**

**ATTESTATION OF CONFORMITY**  
- RAW MATERIALS -  
**ECOCERT COSMETICS**

This attestation has been granted by ECOCERT Greenlife to the company:

**SARABIO ONSEN PROBIOTIC LAB. CO. LTD.**

1356-8 OAZA TSURUMI, BEPPU, OITA, 874-0842  
OITA PREFECTURE  
JAPAN

whose non-organic raw materials (listed hereafter) have been assessed as compliant to the current version of the ECOCERT standard:

**NATURAL AND ORGANIC COSMETICS**

This attestation of conformity has been issued on the basis of the terms and conditions for the verification of raw materials according to the ECOCERT standard defining Natural and Organic Cosmetics available on the ECOCERT website: <http://www.ecocert.com> and the conformity has been established according to the requirements related to the raw materials contained in this standard.

Issued in: L'Isle Jourdan,  
the: 26/01/2021,  
Emilie CHERHAL  
ECOCERT Greenlife General Manager

Valid until: 31/12/2021

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F303(GC)00en Issued the: 26/01/2021 Attestation n°: 1159049

**ECOCERT**

**ATTESTATION OF CONFORMITY - ECOCERT COSMETICS**

List of the approved raw materials of: **SARABIO ONSEN PROBIOTIC LAB. CO. LTD.**

Nat: Natural or from natural origin  
Veg: Physically processed vegetal ingredients  
Synth: Synthetic (petrochemical)

Unless an exception, the following references are published on the ECOCERT raw materials online database for approved raw materials available at the following link: <http://go.ecocert.com/ecoproducts>

Commercial name / INCI / Function	%Nat	%Veg	%Synth	Restriction	Approved since
RG92 extract Mucidospaerium Pulchellum Extract	100	1	0		01/01/2021
active ingredient					
SPA Yeast Extract Hydrolyzed Yeast Extract	100	0	0		01/01/2021
active ingredient					

Valid until: 31/12/2021

WARNING: The sole purpose of the present attestation is to allow the raw material(s) to be used in finished products to be certified as compliant to the standard specified in the first page. In no event this attestation should constitute proof of the actual compliance of the conformity of the raw material(s) to this standard in that context, the raw material(s) listed in the attestation must not be qualified and/or marketed as organic raw material(s) certified in accordance with the above-mentioned standard. The approval of the raw material(s) listed in the present attestation is personally addressed to the above-mentioned beneficiary. It is the beneficiary's liability to ensure that its own customers are aware of the requirements and prohibitions defined in the terms and conditions and governing any reference to and use of the approval of the raw material(s) and that they abide by it.

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