Nature’s Magic Ingredient

AC-GR-01

Glucosyl Rutin

SOHO ANECO Chemicals Co., Limited

Version：2020.01

AC-GR-01

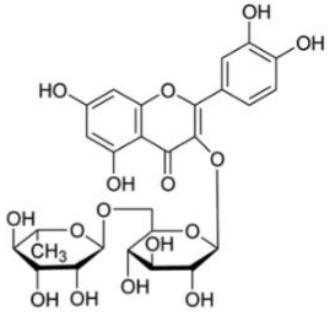
INCI Name: Glucosyl Rutin

Rutin is a flavonoid compound found mainly in fruits, vegetables and herbs.

Sophora japonica

Buckwheat

Citrus fruits



Rutin

Rutin is known as **Vitamin P**.

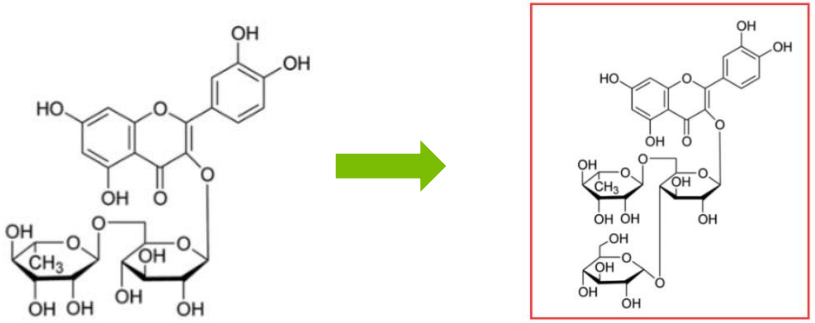
It has anti-allergic, lipid-lowering, anti-inflammatory, antitussive and other effects, and can effectively reduce the fragility and permeability of capillaries.

Rutin is a kind of natural yellow pigment, which can be used as an antioxidant in food industry and also in health products.

However, **rutin has poor water solubility**, which limits its application.

AC-GR-01

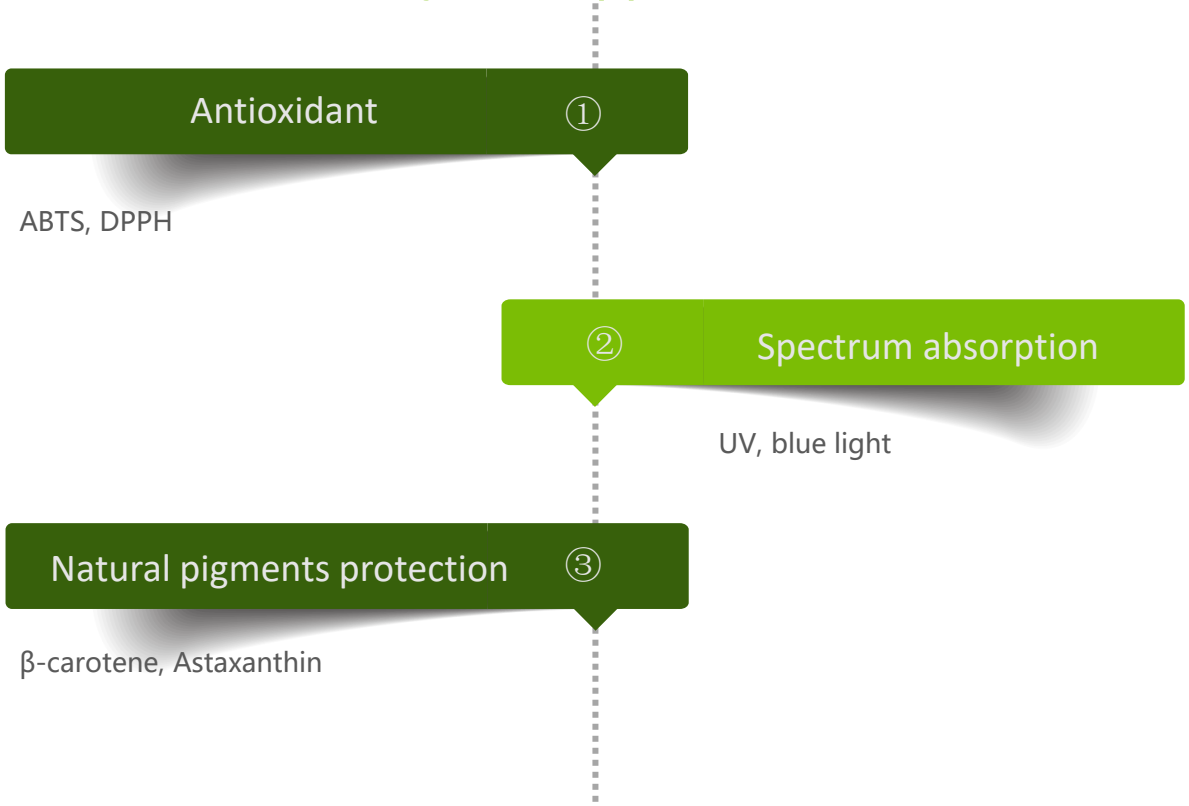
AC-GR-01 is prepared by modifying the molecular structure of rutin through biological enzyme engineering technology **(glycosylation technology)**.



	Solubility (g/100g of water)	Odor	Stability
Rutin	0.01	characteristic	unstable
AC-GR-01	120	none	highly stable

AC-GR-01

Efficacy and applied research



AC-GR-01 Antioxidant

Table 1 The antioxidant capacity of AC-GR-01 tested by ABTS method

Sample	Concentration(ug/mL)	Clearance rate(%)
VC	0.8	11.46
	4	12.42
	20	23.65
	100	73.55
	250	89.86
	500	96.12
	2500	98.01
AC-GR-01	0.8	7.43
	4	8.91
	20	13.73
	100	35.47
	250	93.57
	500	100.4
	2500	100.9

ABTS

ABTS, also known as 2, 2-diazo-bis (3-ethyl-benzothiazol-6-sulfonic acid). Stable blue-green cationic radical ABTS+ is formed after oxidation, which can be dissolved in aqueous phase or acidic ethanol medium.

When the tested substance is added into ABTS+ solution, the antioxidant components contained in it could react with ABTS+ to discolor the reaction system.

The absorbance of ABTS is determined at the maximum wavelength of ABTS+ free radical absorption (734nm), and the clearance rate is calculated.

When the concentration is above 250ug/mL, for Clearance rate, AC-GR-01 is superior to VC.

AC-GR-01 Antioxidant

Table 2 The antioxidant capacity of AC-GR-01 tested by DPPH method

Sample	Concentration(ug/mL)	Clearance rate(%)	IC_{50} μg/mL
VC	0.8	9.46	3.065
	4	45.76	
	20	88.4	
	100	95.3	
	500	95.2	
	2500	95.25	
AC-GR-01	0.8	19.42	2.144
	4	73.29	
	20	87.24	
	100	89.8	
	500	91	
	2500	95.88	

DPPH

DPPH is a kind of synthetic, single electron, stable, nitrogen-centered paramagnetic compound.

In the presence of a radical scavenger, the DPPH accepts an electron or hydrogen atom to form a stable DPPH-H compound that changes its methanol (or ethanol) solution from dark purple to yellow.

The degree of discoloration is quantitatively related to the number of electrons received (free radical scavenging activity).

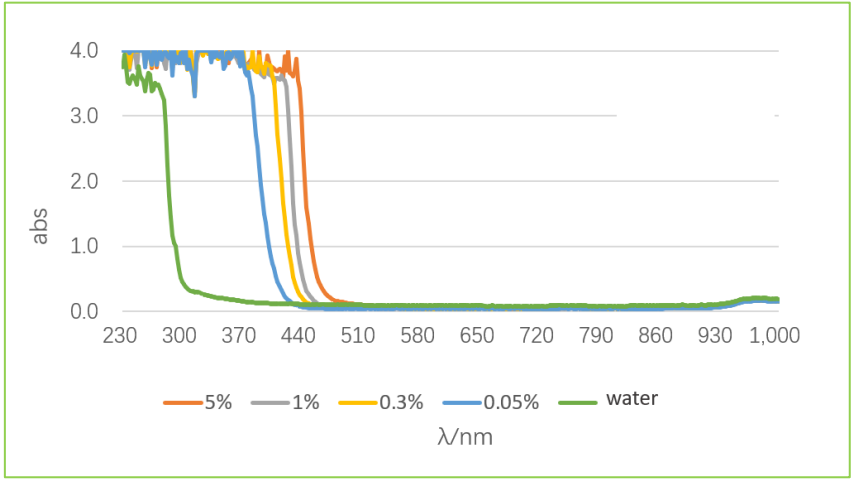
Spectrophotometer can be used for rapid quantitative analysis.

AC-GR-01 Spectrum absorption

(UVC)：200 nm – 290 nm
(UVB)：290 nm – 320 nm
(UVA)：320 nm – 400 nm

Harmful blue band：400nm-450nm

- AC-GR-01 full wavelength absorption value



AC-GR-01 Spectrum absorption

- **Anti-UV**

4-in-1 multiple-effect

1. Improve the product SPF value, assist in sun protection;
2. Protection main sunscreen in the formula;
3. Anti-inflammatory, Soothing, Relieves Redness;
4. Anti-oxidation, resistance to free radicals.

- **Anti-blue light**

- *0.05% AC-GR-01 solution*

Blue light is almost completely absorbed

- *Blank-water*

Blue light penetrates completely

AC-GR-01

Spectrum absorption

- **Anti-UV**

Formula for sunscreen

Without AC-GR-01 SPF=81.54
With AC-GR-01 SPF=114.45

Without AC-GR-01 UVAPF=11.0
With AC-GR-01 UVAPF=12.35

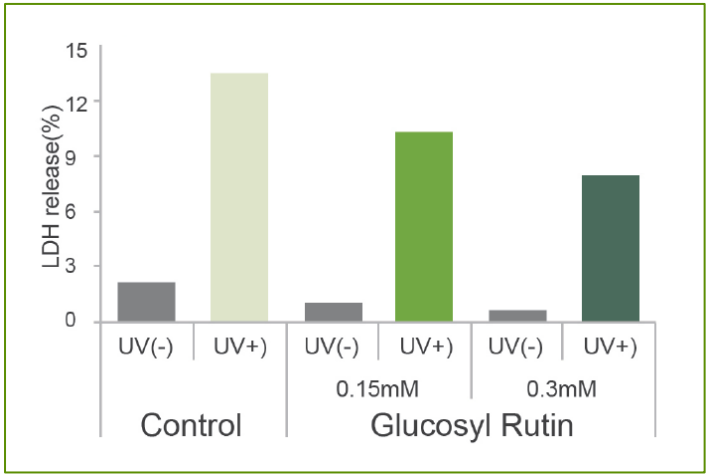
	Brand Name	INCI	Content/%	Supplier
A	ESCALOL557	ETHYLHEXYL METHOXYCINNAMATE	9.0	ASHLAND
	Eusolex OCR	OCTOCRYLENE	2.0	MERCK
	Eusolex OS	ETHYLHEXYL SALICYLATE	2.0	MERCK
	ESCALOL S	BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE	1.0	ASHLAND
	Eusolex 4360	BENZOPHENONE-3	1.0	MERCK
	-	STEARYL GLYCYRRHETINATE	0.2	FZ
	DC345	CYCLOPENTASILOXANE & CYCLOHEXASILOXANE	3.0	DOWCORNING
	NPGC-2	NEOPENTYL GLYCOL DICAPRYLATE/DICAPRATE	3.0	VANTAGE
	EMT10	HYDROXYETHYL ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER	0.5	SEPPIC
B	-	AQUA	To 100	-
	Liponic BIO EG-1	GLYCERETH-26	3.0	VANTAGE
C	SIMULGEL EG	SODIUM ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER & ISOHEXADECANE & POLYSORBATE 80	1.2	SEPPIC
	Tinosorb M	METHYLENE BIS-BENZOTRIAZOLYL TETRAMETHYLBUTYLPHENOL	8.0	BASF
	EUXYL K350	PHENOXYETHANOL & METHYLPARABEN & ETHYLPARABEN & ETHYLHEXYLGLYCERIN	0.5	S&M
	AC-SF-1	ACRYLATES COPOLYMER	1.0	ANECO
D	AC-GR-01	GLUCOSYLRUTIN	0.5	ANECO

The formula was developed for preliminary test, without pilot production test.
The application of the formula is for reference only.

AC-GR-01 Spectrum absorption

- **Anti-UV**

The strong anti-oxidant and UV absorption properties of AC-GR-01 make it an ideal ingredient for the prevention of the skin against UV-induced damage.

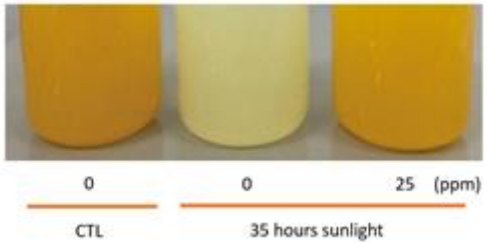


By detecting release of lactate dehydrogenase (LDH), cell membrane integrity can be evaluated. It shows that Glucosyl Rutin can significantly absorb UV to prevent skin cell damage.

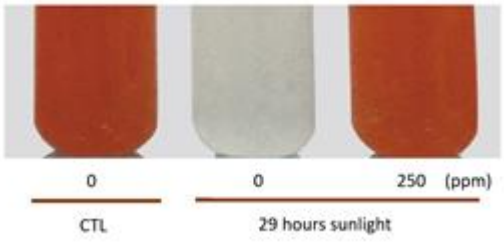
AC-GR-01

Natural pigments protection

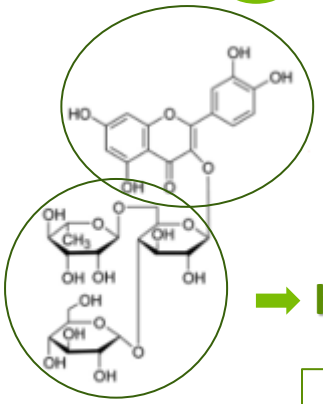
β-carotene (25ppm)



Astaxanthin (25ppm)



Alkannin
Retinol
Phenylethyl Resorcinol
Resveratrol…



Monoglucosyl Rutin

➡ **Hydrophobic**

➡ **Hydrophilic**

Core-Shell Structure

AC-GR-01

Toxicology, Heavy Metal and Microorganism Testing

intertek
Total Quality. Assured.

- Skin irritation √
- Eye irritation √
- Oral mucosa irritation √
- Cytotoxicity √
- Phototoxicity √

- Pb, Hg, As, Cd √
- Total plate count √
- Mold and yeast √
- Thermotolerant coliforms √
- Staphylococcus aureus √
- Pseudomonas aeruginosa √

AC-GR-01

Product information

Product Name	AC-GR-01
INCI Name	Glucosyl rutin
CAS NO.	130603-71-3
Molecular formula	$C_{33}H_{40}O_{21}$
Molecular weight	772.66g/mol

According to ISO 16128

Natural Index of AC-GR-01: 1

Formulation guide

- Can be added directly in water phase prior to emulsification.
- Should in formulation below 60 and at pH 3-7, pH＜6 is better.
- In order to avoid the interference of metal ions, it is recommended to add appropriate amount of chelating agent, such as EDTA, phytic acid, etc.
- Precipitation maybe occurred if the aqueous solution is left for a long time, it can be solved by adding some polyols, such as propanediol, butylene glycol, etc.

Thank you!

We are not a simple supplier; We are your partner.

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