Glycosphere-PCOg

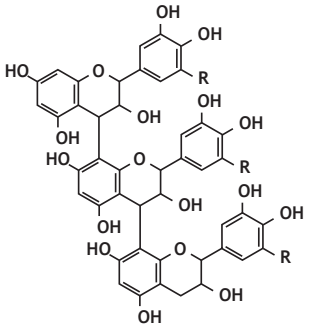
The anti-aging power of plant polyphenols

Procyanidolic Oligomers (PCO)

PCOs are natural anti-oxidants and free radical scavengers, extracted from many plants. The most common sources are grape seed and pine tree bark. These polyphenols have proved to be excellent free-radical scavengers, with much higher activity than Vitamin E and Vitamin C. PCOs can be used with benefits in skin care products to promote bio-synthesis, maintenance and repair of collagen, and to increase the smoothness and strength of the dermis.

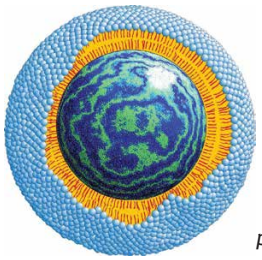
However, PCOs are unstable in cosmetic formulations and under irradiation, rapidly losing their activity and discoloring emulsions they are added to.

Procyanidolic oligomers: chemical structure of a trimer



Glycospheres-PCOg

Glycospheres are submicron delivery systems. They can entrap PCOs within their hydrophilic inner core, separating them from the constituants of the formulas and protecting them from degradation. PCOs keep their free-radical scavenging activity after entrapment, making Glycospheres-PCOg the ideal system to bring the power of these plant polyphenols into skin care formulas.



Glycospheres are based on a stable inner core, made of a network of cross-linked starch. This polysaccharide has been modified with a quaternary ammonium, which allows it to bind and entrap poly-anions like PCOs. The core is surrounded by lipid layers which helps protect the entrapped molecules.

In vitro test 1 - DPPH test:

2,2-diphenyl-1-picrylhydrazyl (DPPH, a stable free radical) in vitro test has been used to show the capacity of PCO to scavenge free radicals. In this test, we compared the anti-free radical activity of grape PCO, either in solution or entrapped in Glycospheres with α-tocopherol (Vitamin E) by measuring the concentration (EC50) in antioxidant necessary to modify 50% of DPPH (note: the results below are expressed as 1/EC50)*

- PCO in solution: 467
- Glycospheres-PCOg: 513
- α-tocopherol: 154

This test shows that PCOs are much more potent free-radical scavengers than Vitamin E and, while Glycospheres protect PCOs from degradation, they do not modify their activity.

In vitro test 2 - NBT test:

We used Nitroblue Tetrazolium (NBT) in vitro test to demonstrate the ability of PCOs to inhibit the formation of the superoxide radical ($O_2^{\bullet -}$), generated by UV light during the test (note: the results below are expressed as relative activity compared to PCO in solution).

- PCO in solution: 100
- Glycospheres-PCOg: 147
- α-tocopherol: -27

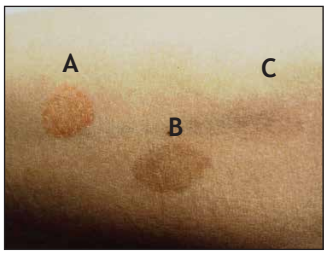
While Vitamin E is not active in the conditions of our test, PCOs show a very high level of activity. However, PCOs are not stable under UV light: a solution of PCO has a much lower activity than Glycospheres-PCOg, which remain stable during the test.

INCI name:

Water (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Vitis Vinifera (Grape) Seed Extract (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin

In vivo Dithranol test:

when applied to the skin, Dithronal generates free-radicals, which create an erythema (A). If the skin has been protected with a solution of PCOs, the erythema is reduced (B). Application of a suspension of Glycospheres-PCOg instead of the solution almost eliminates the erythema (C).



Applications

- *Gs-PCOg are used as free-radical scavengers in anti-aging or anti-inflammatory products, hair care, anti-dark circle eye cream or whitening formulas*
- *Gs-PCOg is best formulated by replacing part of the water in the formula by the Glycosphere suspension*
- *Recommended use level is between 1 and 5%*

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KFL-108-BR

Brightening Moisturizer

Part 1

- Deionized Water - Part 1 - *Water* 59.70%
- Glicerina - Mapric: *Glicerina* 3.00%
- Liposorb® L-20 - Vantage: *Polysorbate 20* 1.00%

Part 2

- **CPF-3300@10cSt** - Avantor/Kobo Products: *Phenyl Trimethicone* 8.00%
- SALACOS® 99 - Ikeda: *Isononyl Isononanoate* 8.00%
- **CXG-1104** - Avantor/Kobo Products: *Dimethicone (And) Dimethicone/Vinyl Dimethicone Crosspolymer* 3.00%
- Abil® Care XL 80 - Evonik: *Bis-PEG/PPG-20/5 PEG/PPG-20/5 Dimethicone (And) Methoxy PEG/PPG-25/4 Dimethicone (And) Caprylic/Capric Triglyceride* 2.50%

Part 3

- SEPIPLUS™ 400 - Seppic: *Hydroxyethyl Acrylate/Sodium Acryloyldimethyl Taurate Copolymer (And) Isohexadecane (And) Polysorbate 60* 0.80%

Part 4

- Deionized Water - Part 2 - *Water* 5.00%
- **Gs-GT** - Kobo Products: *Water (And) Camellia Sinensis Leaf Extract (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin* 1.00%
- **Gs-PCOg** - Kobo Products: *Water (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Vitis Vinifera (Grape) Seed Extract (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin* 1.00%
- **Gs-VA100C** - Kobo Products: *Butylene Glycol (And) Water (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Polysorbate 20 (And) Retinol (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin (And) BHT (And) BHA* 1.00%

Part 5

- **SESQ-ML5** - Kobo Products: *Polymethylsilsesquioxane* 3.00%
- **SPC/KTZ INTERVAL RED-I2** - Kobo Products: *Mica (And) Titanium Dioxide (And) Ethylene/Methacrylate Copolymer (And) Isopropyl Titanium Triisostearate* 2.00%
- Cosmoguard® SL CP - Cosmotec: *Phenoxyethanol (And) Ethylhexylglycerin* 1.00%

Manufacturing Procedure:

1. Mix Part 1.
2. Combine Part 2 and add to Part 1 slowly while mixing.
3. Add Part 3.
4. Combine Part 4 and add to the formula.
5. Add Part 5.

Description:

This brightening moisturizer features Glycospheres, a delivery system developed by Kobo that gives the actives protection and stability. The Gs products in this formulation contain Retinol, Grape PCOs and Green Tea Polyphenols. SPC/KTZ INTERVAL RED-I2 is a microsphere complex that gives soft focus and radiance. SESQ-ML5 is a polymethylsilsesquisoxane microsphere that also helps with soft focus. CXG-1104 is an elastomer gel that provides nice feel. CPF-3300@10cSt, a low viscosity silicone, increases spreadability.