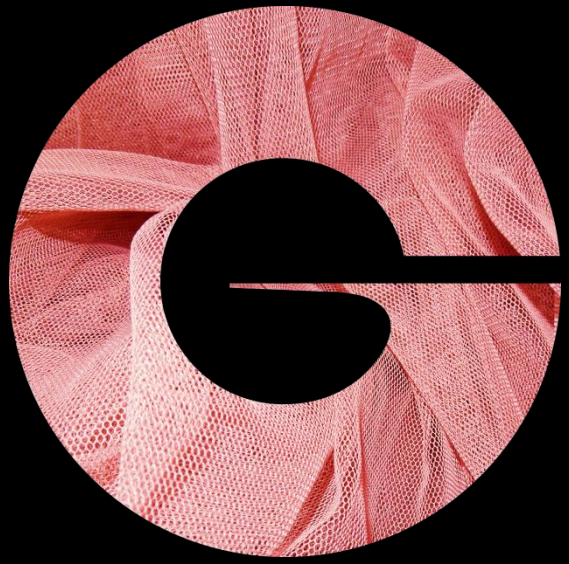
Active Beauty

Unicontrozon® C-49

The Overall prOtectOr against O3

Crafter by synthesis and green technology



Givaudan

engage your senses

Natural molecules to counteract environmental damages on skin.

Unicontrozon® C-49 protects the integumentary system against the daily pollution aggressions:

- ◇ skin and hair-dyes protection
- ◇ an overall protection of the different biomolecules of the skin.

Unicontrozon C-49 is a natural combination of fumitory and lemon fruit extracts with fumaric acid for an efficient protective effect against ozone.

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In vitro evaluations

Protective effect against ozone on biomolecules occuring in the skin

Protocol:

Unicontrozon® C-49 was tested for its ability to protect 6 different skin components after ozone exposure. A solution of each biomolecule was mixed with the product. The corresponding physical parameters were measured for the first time. Then water (control) or ozone were added and the same parameters were measured again after a pre-determined time.

The change in the reading corresponds to the effect of ozone.

Unicontrozon® C-49 shows an overall protection of the skin by preventing damage to different biomolecules.

Summary of the results

Skin molecule	Category	Unicontrozon	Protection
ß-glucosidase	Enzyme	1%	80%
Erythrocyte	Cell membrane	1%	80%
Hyaluronic acid	Polysaccharide of the ECM	0.2 %	100%
Myoglobin	Protein (oxygen carrier)	3%	70%
Riboflavin	Hydrophilic vitamin	0.2 %	100%
Tocopherol	Lipophilic vitamin	0.2 %	80%

Details of each result in the following slides

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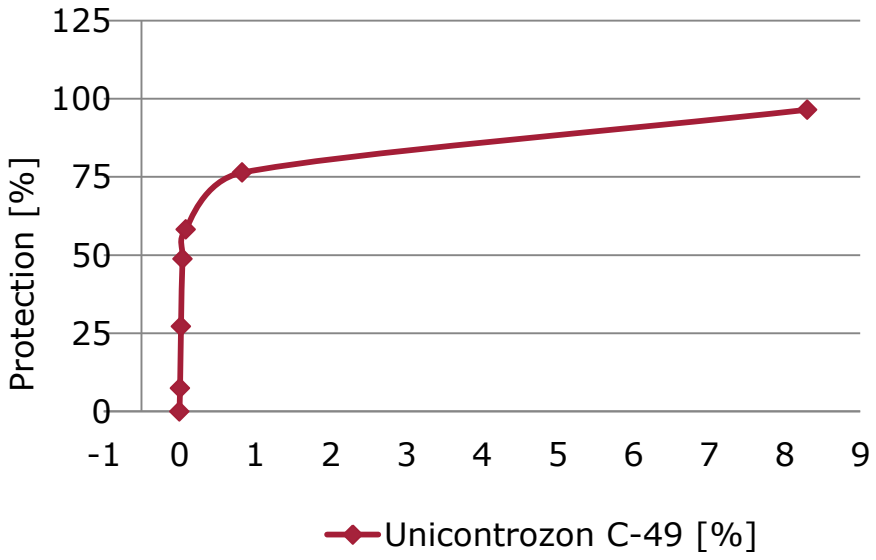
Protection of enzymes against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect ß-glucosidase from ozone. The enzyme, the product and ozone were mixed for 2 min before inactivating ozone. Enzyme activity was then measured by absorbance (430 nm).

Unicontrozon® C-49 at 1% protects enzymes by 80% from ozone damage.

Protection of ß-glucosidase* by Unicontrozon® C-49 against ozone damage



*ß-glucosidase was chosen as a representative of cell enzymes (enzymes=proteins that catalyse all cellular metabolic processes)

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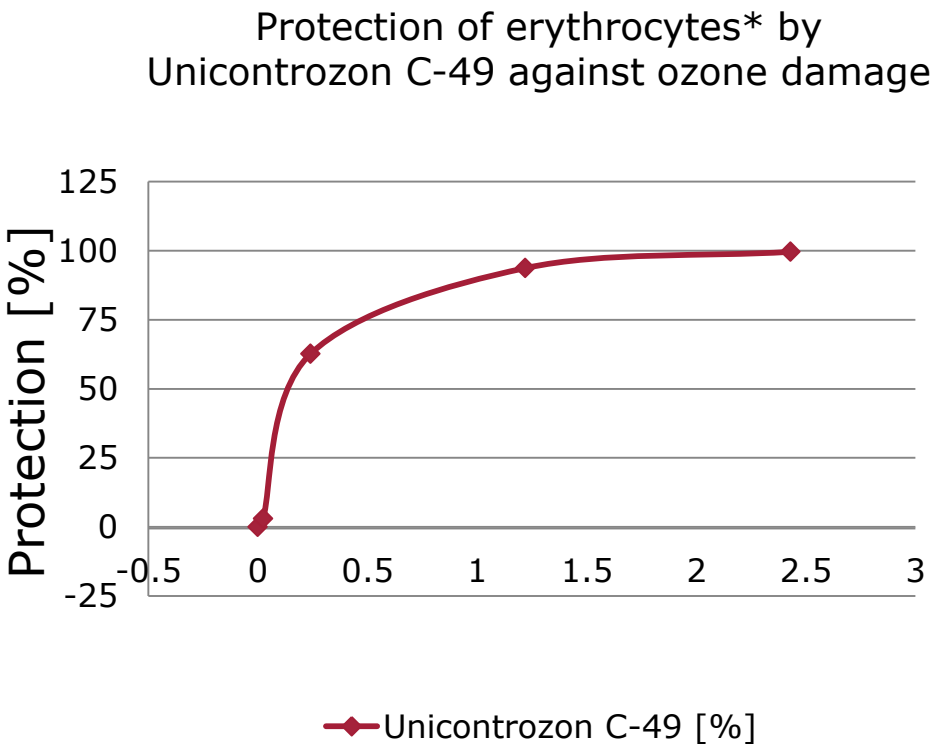
Protection of cell membranes against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect cell (here erythrocyte) membranes, from ozone. Erythrocytes, suspended in a NaCl solution, were mixed with the product and with ozone for 2 min before centrifugation of the intact cell. Absorbance of the supernatant was then measured (415 nm).



Unicontrozon® C-49 at 1% protects cell membranes by 80% from ozone damage.

*Erythrocytes are red blood corpuscules with a common cell membrane in which ozone damage can be easily evaluated (due to red pigment spread in the solution).

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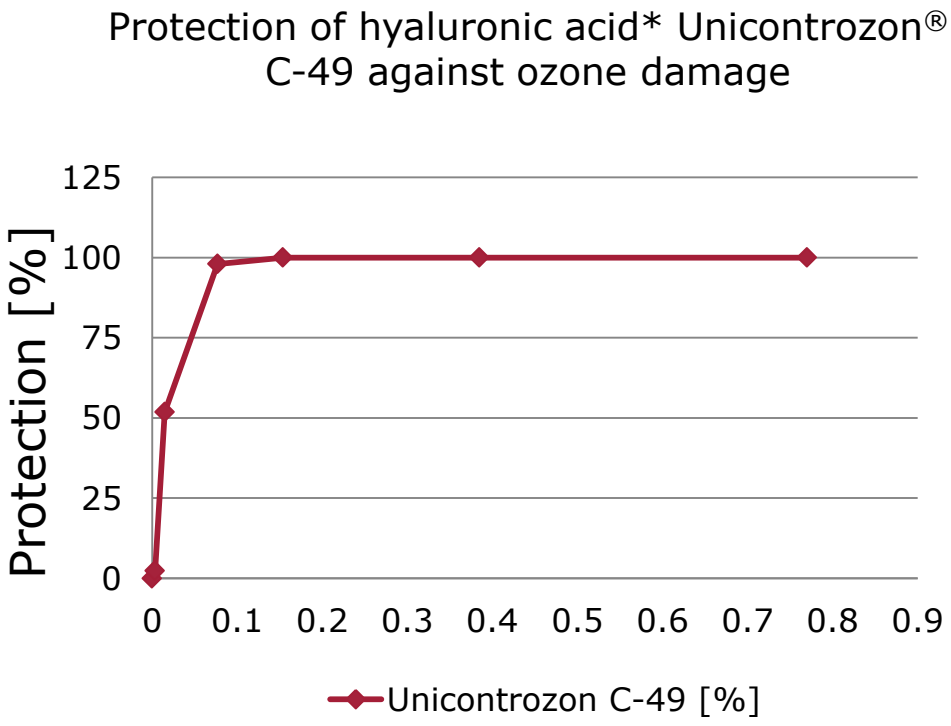
Protection of the extra-cellular matrix against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect hyaluronic acid. The viscosity of sodium hyaluronate, with water and the product was measured first. An ozone solution was added for 3 min, before a second viscosity measurment.

Unicontrozon® C-49 at 0.2% protects the ECM by 100% from ozone damage.



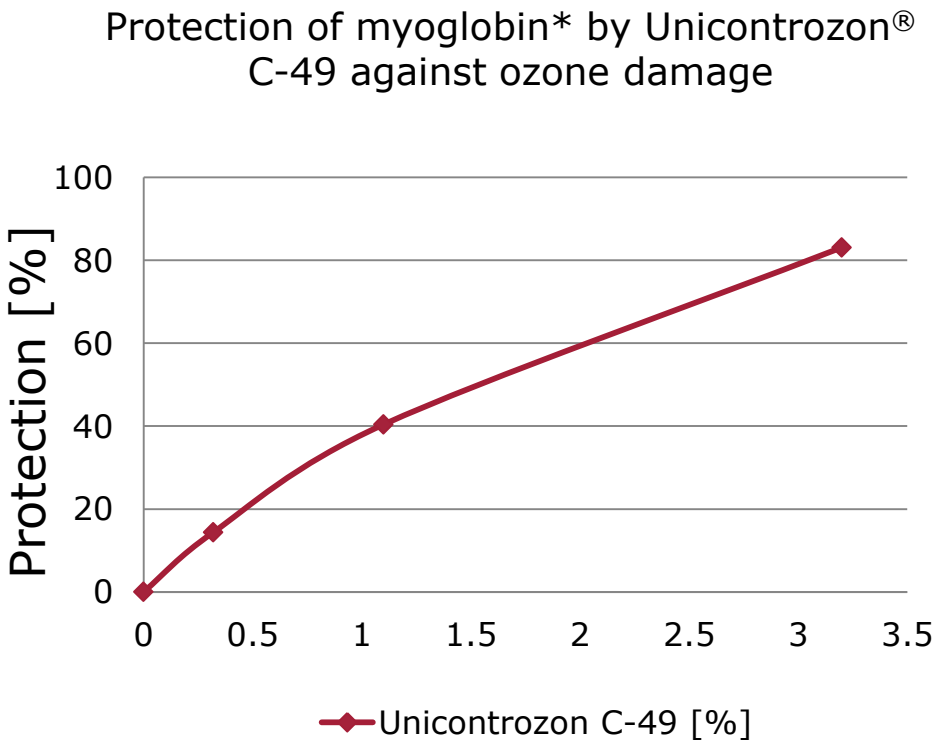
*Hyaluronic acid was used because it is an important polysaccharide of the extracellular matrix of the connective tissue.

Protection of proteins against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect myoglobin. Absorbance measurement (410 nm) was run on a mix of myoglobulin solution with distilled water and incubated with the product and the ozone solution for 5 min.

Unicontrozon® C-49 at 3% protects proteins by 70% from ozone damage: risk of denaturation.

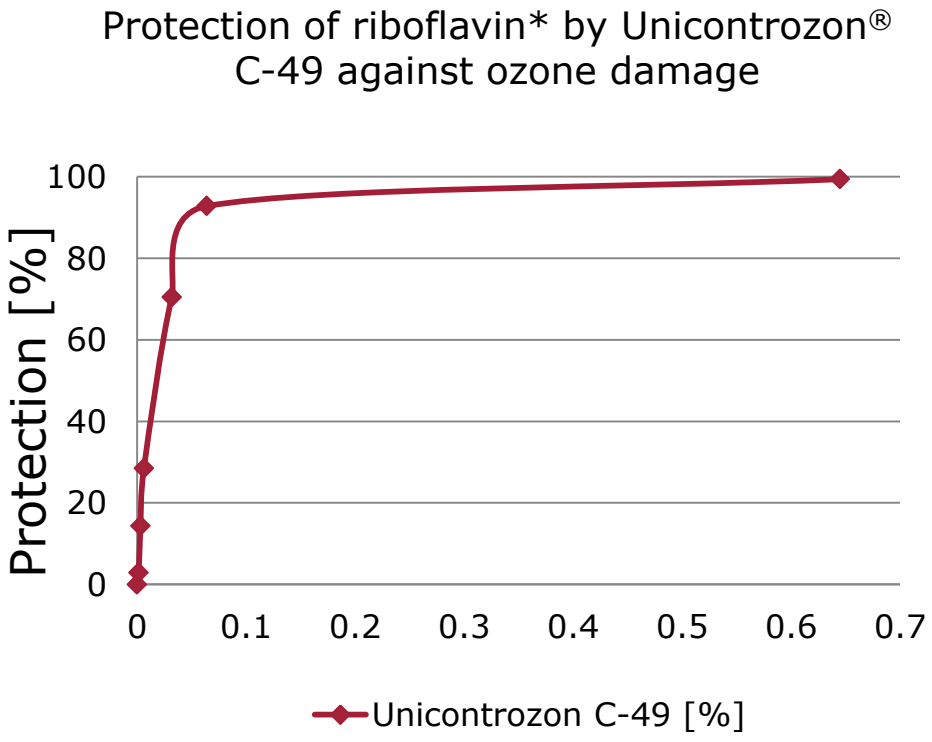


*Myoglobin is an oxygen carrier. This proteins perform a large variety of tasks in the body.

Protection of vitamins against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect riboflavin monophosphate. Absorbance measurement (445 nm) was run on a mix of riboflavin solution with a phosphate buffer and incubated with the product and the ozone solution for 2 min.



*Riboflavin monophosphate is a hydrophilic vitamin of the skin, important for regulating metabolic processes.

Unicontrozon® C-49 at 0.2% protects this hydrophilic vitamins by 100% from ozone damage.

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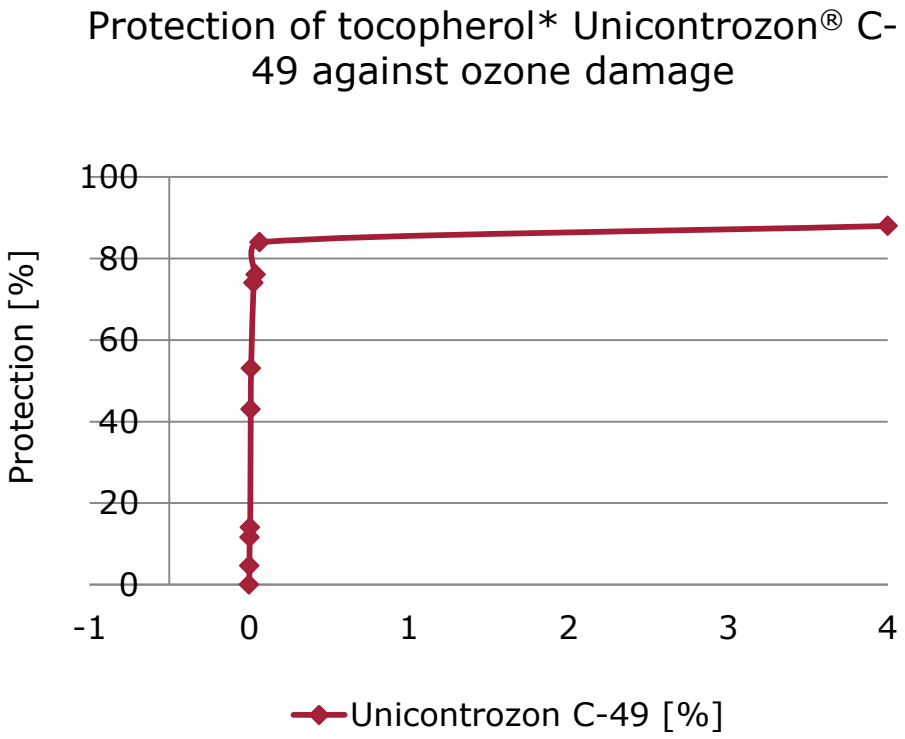
Protection of vitamins against ozone damage

Protocol:

Unicontrozon® C-49 was tested for its ability to protect tocopherol. A mix of tocopherol solution with the product was stirred to produce a white suspension. Ozone solution was added and the absorbance measurement (293 nm) was run after 1 min.

Unicontrozon® C-49 at 0.2% protects this lipophilic vitamins by 80% from ozone damage.



*Tocopherol is one of the lipophilic vitamins occuring in the skin, which has an protective function against free radicals and as an antioxidant.

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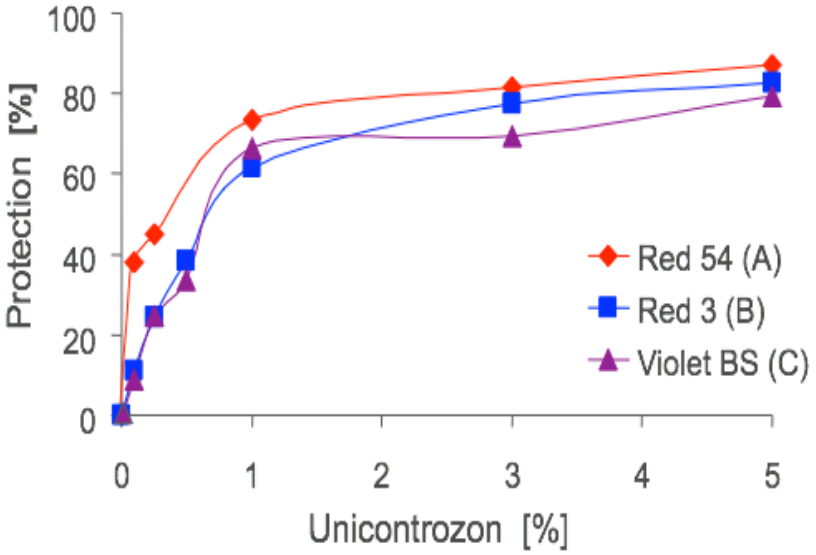
Protection of hair dyes against ozone damage

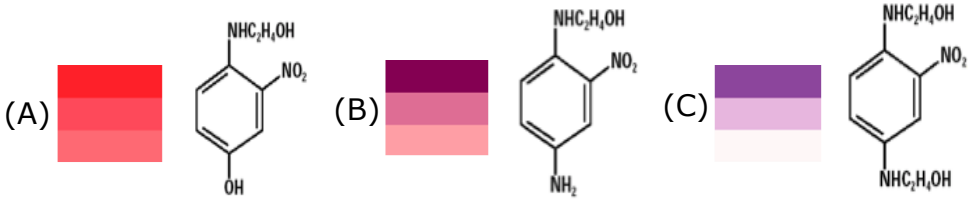
Protocol:

Unicontrozon® C-49 was tested for its ability to protect hair dyes. A first absorption measurement (at ƛmax which is different according to the dye solution) was done on a mix of a solution of the particular dye with the product. Then, the ozone solution was added for 2 min before a second measurement.

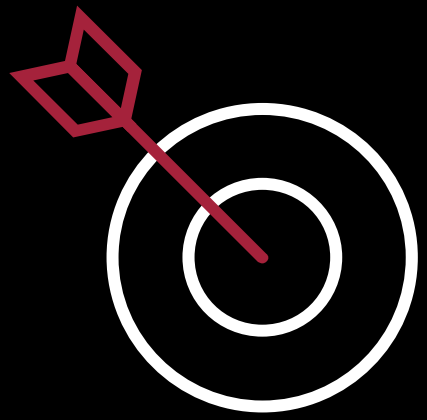
Protection of three different hair dyes by Unicontrozon® C-49



Unicontrozon® C-49 at 1% provides various hair-dyes with more than 60% protection against the effects of ozone.



Summary



Technical information
Unicontrozon® C-49

INCI	Water (and) Propylene Glycol (and) Fumaric Acid (and) Fumaria Officinalis Flower/Leaf/Stem Extract (and) Citrus Limon (Lemon) Fruit Extract
Origin	Natural and organic synthesis
Preservation	None
Appearance	Clear to slightly opalescent, brown liquid
Solubility	Water-soluble
Dosage	2.5% - 5%
Processing	Can be incorporated in any formula in liquid form at pH between 5.0 and 8.0 and temperature below 50°C
Compliance	IECIC LISTED INCI CHINA IECIC LISTED; SUITABLE VEGAN SUITABLE

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Thank you

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