

Hydroxytyrosol-rich antioxidant extract

PRODUCT SHEET | Liquid grade hydroxytyrosol concentration 20%

Natural olive-derived phenolics recovered from olive oil by-products sourced in the Iberian Peninsula. Developed by Dr Ítala Marx through a proprietary solvent-free bioprocess within the CircO cosmetic ingredient line.



Product characteristics

Parameter	Description
Origin and source	Natural, plant-derived Olive pomace / alperujo Olea europaea L.
Geographical origin	Iberian Peninsula
Form and colour	Liquid extract Brown
Process	Proprietary solvent-free bioprocess
Hydroxytyrosol content	Minimum 20% for this grade* Customisable grades up to 50%
pH	4.6 ± 1
Phenolic characterisation	Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Phenolic composition

Free hydroxytyrosol; tyrosol; hydroxytyrosol glucosides and related derivatives; secoiridoid aglycones; oleacein; oleocanthal. Quantitative profiles and complete supplied composition are grade-specific.

Quality specifications proposed for validation

Parameter	Proposed criterion / reporting requirement
Total aerobic microbial count	≤1,000 CFU/g
Moulds and yeasts	≤100 CFU/g
P. aeruginosa / S. aureus / C. albicans	Not detected in 1 g (each organism)
E. coli / Salmonella spp.	Not detected in 10 g (each organism)
Heavy metals screening	≤5 mg/kg provisional benchmark [7]; analytical scope to be defined
Pb, Cd, Hg and As	Report individually in mg/kg; element-specific limits to be agreed
Pesticide residues	<LOQ for the agreed screening panel; state LOQ for each analyte
Other relevant contaminants	<agreed limit or LOQ, with named analytes and validated methods

Microbiological benchmarks are adapted from a commercial cosmetic hydroxytyrosol datasheet [7].

Microbiological method suitability must be demonstrated for this extract. “<LOQ” applies only to the named analytes tested; it does not imply absence of all contaminants.

Formulation and supply

For evaluation in serums, creams, emulsions and body lotions. Use level, incorporation conditions, water miscibility and colour impact require formulation trials. Shelf life, storage, packaging and INCI designation are to be established for the supplied grade.

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*The assay must define free HT versus HT including conjugated forms, and as-supplied versus dry-matter basis. At 20% w/w, HT content is 200 mg/g on the same basis, not total phenolic content. No CircO ORAC result is claimed.

Natural antioxidants and ORAC benchmarks

Literature context

Two functions to evaluate separately

Antioxidants may delay oxidation within a cosmetic formula (technological function) or be investigated for effects on skin oxidative stress (biological function). Demonstrating one does not establish the other. The BTSA guide highlights both roles and the need to select antioxidants for the actual formulation. [1]

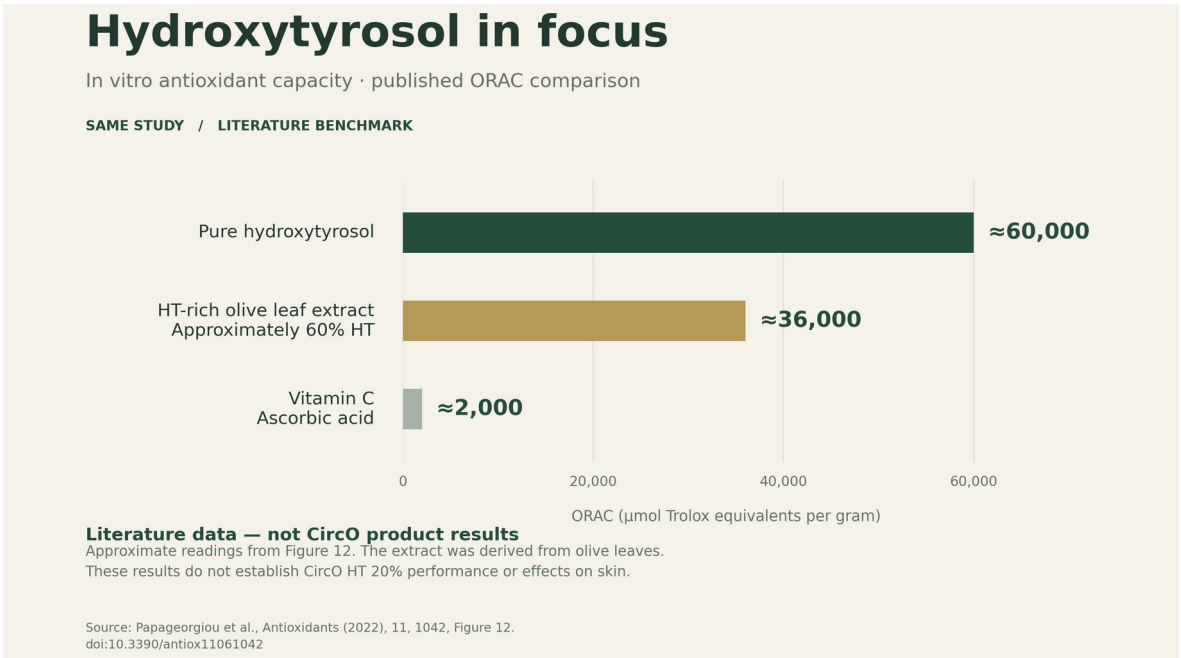
Natural antioxidant families

Examples include tocopherols, ascorbic acid and its derivatives, rosemary extracts and green tea catechins. Selection criteria include phase compatibility, dose, processing and storage stability, sensory impact, safety and cost. Mixtures may offer complementary action; synergy must be demonstrated for the tested combination. [1]

Published ORAC results

Values are µmol Trolox equivalents (TE)/g unless stated otherwise. Materials, reporting bases and protocols differ; this table is not a head-to-head ranking.

Material	ORAC result	Basis and reference
Olive mill wastewater complex (HT, tyrosol, oleacein)	10,000	Dry extract; reported ORAC units/g [2]
Olive pomace extracts: conventional / OPT1 / OPT3	4,360 ± 80 8,800 ± 900 5,100 ± 200	Dry extract; converted from mmol TE/g [3]
Freeze-dried olive vegetation water fraction	2,011	Freeze-dried material [4]
Pure hydroxytyrosol	42,560	Pure compound; same study as previous row [4]
trans-Resveratrol	25,462	Compound; microplate ORAC [5]
Ascorbic acid / pure HT / HT-rich leaf extract (~60% HT)	~2,000 / ~60,000 / ~36,000	Approximate Figure 12 readings; same-study comparison; leaf-derived extract [6]



These studies support investigating olive-derived phenolics as antioxidants. They do not establish CircO hydroxytyrosol-rich extract 20% ORAC, superiority over vitamin C or resveratrol, skin efficacy or antimicrobial preservation. ORAC and ORAC.5 are distinct outputs. Test CircO and reference compounds under the same protocol, reporting as-supplied and dry-matter results.



Sources

- [1] BTSA. Ingredientes naturales y sostenibles para mejorar los productos cosméticos. Supplied 2024 guide; antioxidant functions, natural antioxidants and formulation selection.
- [2] Chemical and Cellular Antioxidant Activity of Phytochemicals Purified from Olive Mill Waste Waters. *J Agric Food Chem* (2011). doi:10.1021/jf103881b
- [3] Olive Pomace Phenolic Compounds and Extracts Can Inhibit Inflammatory- and Oxidative-Related Diseases of Human Ocular Surface Epithelium. *Antioxidants* (2021), Table 1. doi:10.3390/antiox10071150
- [4] Hydrolyzed Olive Vegetation Water in Mice Has Anti-Inflammatory Activity. *J Nutr* (2005), Table 1. [jn.nutrition.org/article/S0022-3166\(22\)10268-3/fulltext](https://jn.nutrition.org/article/S0022-3166(22)10268-3/fulltext)
- [5] Development and Validation of an On-Line HPLC-DAD-Antioxidant Assay (ORAC)/ESI-HRMS System... *J Chromatogr Sci* (2023), Table I. academic.oup.com/chromsci/article/61/6/530/7030839
- [6] High-Yield Production of a Rich-in-Hydroxytyrosol Extract from Olive (*Olea europaea*) Leaves. *Antioxidants* (2022), Figure 12. doi:10.3390/antiox11061042
- [7] Wacker. HTEssence Hydroxytyrosol Powder COSMETIC, TDS dated 1 July 2020. Microbiological benchmarks for a different, powdered ingredient; not validated CircO specifications.