

**EUROL<sup>®</sup> BT**

Harnessing the free radical-scavenging power of olive leaves

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# EUROL<sup>®</sup> BT



COSMOS  
APPROVED

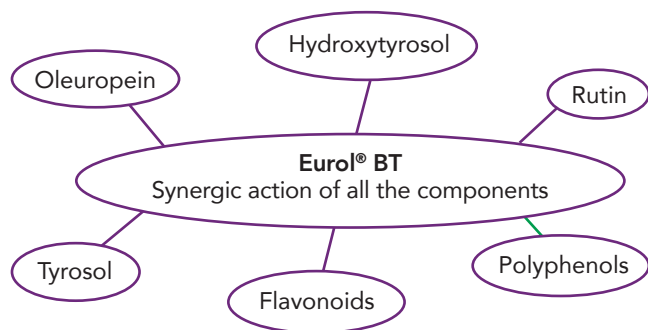


EuroI<sup>®</sup> BT is a natural free radical-scavenging active derived from *Olea Europaea* (Olive) tree leaves. An understanding of olive tree leaves' benefits arose from the observation that they are amongst the most resistant trees to a variety of diseases due to the presence of a highly potent and protective anti-oxidant system.

## A BIOMIMETIC INGREDIENT

EuroI<sup>®</sup> BT concentrates bio-polyphenol and bioflavonoid compounds – Phytocomplex – that synergistically function to create biological activity. Oleuropein is the predominant active molecule found in EuroI<sup>®</sup> BT, but the synergetic action of the bioactive compounds gives EuroI<sup>®</sup> BT excellent potency as an anti-oxidant, anti-inflammatory and anti-acne active.

EuroI<sup>®</sup> BT is obtained through a proprietary aqueous cold-phase extraction method. This technique is solvent-free and helps maintain the molecular integrity of the Phytocomplex for optimal clinical efficacy. Thanks to its unique composition, EuroI<sup>®</sup> BT combines anti-oxidant, anti-irritation and anti-bacterial benefits for all beauty and personal care formulations.



## TECHNICAL DATA

- *Olea Europaea* (Olive) Leaf Extract, Water
- Multifunctional active ingredient
- Natural origin
- Water soluble active ingredient
- pH efficacy: 5 – 7.5
- Advisable to be added into the formula at room temperature
- Effective concentration 0.1 – 1%
- Alcohol-free ingredient
- No preservatives, PEG-free
- Shelf-life: 3 years

## APPLICATIONS



Facial care



Eye care



Body care



Baby care



Wet wipes



Hair care



Make-up



Shaving products



Hand/Nail care



After-sun care

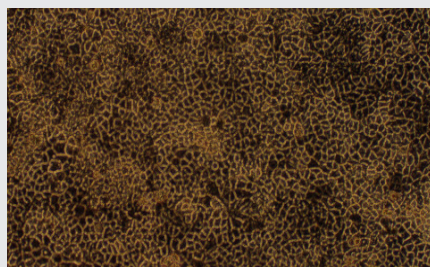
## INTRODUCING EUROL<sup>®</sup> BT POWDER

EuroI<sup>®</sup> BT is now available in powder as well as liquid form. Both forms of multifunctional, COSMOS-compliant EuroI<sup>®</sup> BT boast the same anti-aging, anti-irritation, anti-inflammatory, moisturizing, skin elasticizing, antimicrobial, anti-acne, skin lightening and free radical quenching benefits.

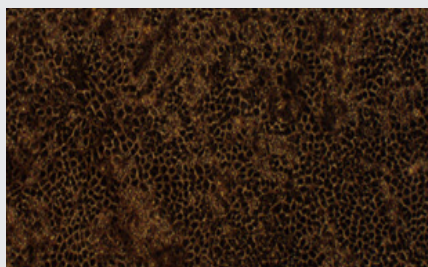
## ANTIOXIDANT ACTION, CELL PROTECTION

- Epithelial cell monolayers were incubated with EuroI<sup>®</sup> BT at 0.5% for a period of 15 hours at 37°C.
- The organic oxidizing agent, tertbutyl-hydroperoxide (TBHP), was then added to the culture medium at a concentration 25 mM for 3 hours to untreated cells and cells previously incubated with EuroI<sup>®</sup> BT.
- Cell morphology assessed by microscopy.

When both are protected with EuroI BT and treated with an oxidant agent, a significantly greater number of healthy cells can be seen.



Healthy Cells



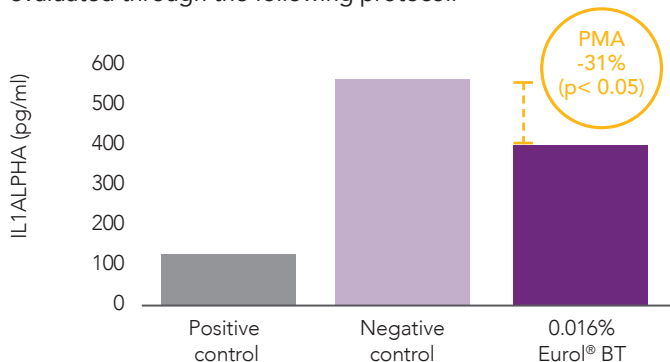
Cells Treated with Oxidant



Protected Cells Treated with Oxidant

## ANTI-INFLAMMATORY ACTION THROUGH REDUCTION OF INTERLEUKIN 1 $\alpha$ RELEASE

Interleukin 1 $\alpha$  is responsible for the production of inflammation, as well as the promotion of fever and sepsis. IL-1 $\alpha$  inhibitors are being developed to interrupt those processes and treat diseases. The capacity of Eurol® BT to reduce the release of IL-1 $\alpha$  has been evaluated through the following protocol:

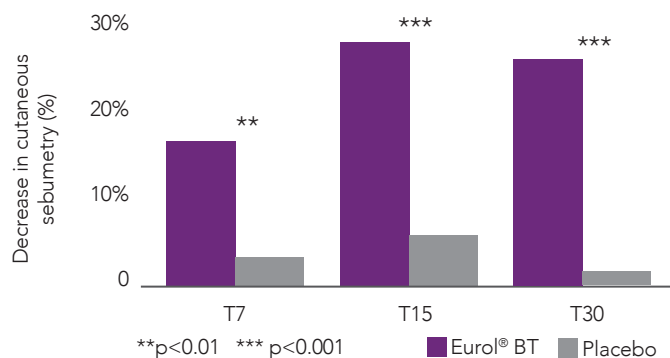


- Human keratinocytes (2544 R14) were exposed to a strong skin irritant, phorbol 12-myristate 13-acetate (PMA) at 0.1  $\mu$ g/ml
- Eurol® BT was tested at 0.016%
- IL-1 $\alpha$  secretion was quantified by ELISA

Even at extremely low concentrations, Eurol® BT significantly decreases the synthesis/release of IL-1 $\alpha$  by PMA induced keratinocytes, thus suggesting an anti-inflammatory action.

## NATURAL ANTI-ACNE ACTIVITY

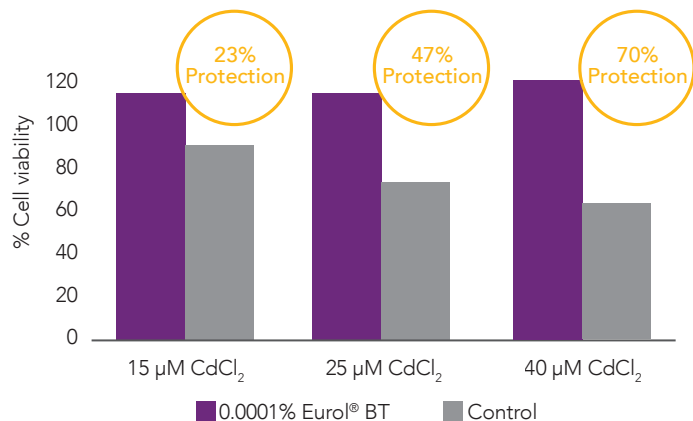
Clinical/instrumental placebo-controlled evaluation of the efficacy of a cosmetic product for treatment of acne-prone skin. Treatment with Eurol® BT shows significant decrease in skin sebumetry after only 15 days as well as an impact on reduction of skin redness, making Eurol® BT a perfect natural active to fight acne.



- Application of the products: Eurol® BT 1%; Placebo
- Examination of 40 subjects over 18 years old, with acne-prone skin
- Facial assessments after 7, 15, 30 days of continuous use of the product (twice a day)

## EUROL® BT PROPERTIES FOR ANTIPOLLUTION

Eurol® BT is a multifunctional active ingredient with strong antioxidant, anti-inflammatory and anti-acne properties already demonstrated in previous tests. Pollution is becoming an increasing concern for all application types (skin care, make up, baby care, sun care), so we wanted to demonstrate that strong anti-oxidant properties of Eurol® BT provide an all-encompassing protection for your skin!



Environmental exposure to hazardous metals, such as arsenic (As), cadmium (Cd), chromium (Cr), and lead (Pb), lead to acute toxicity at higher concentrations. This exposure also involves the development of diseases in individuals exposed chronically to low levels. Not only because these metals lead to acute toxicity at higher concentrations, but also because they may be involved in the development of diseases in individuals exposed chronically to low levels.

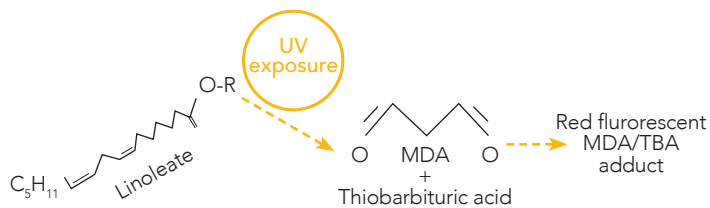
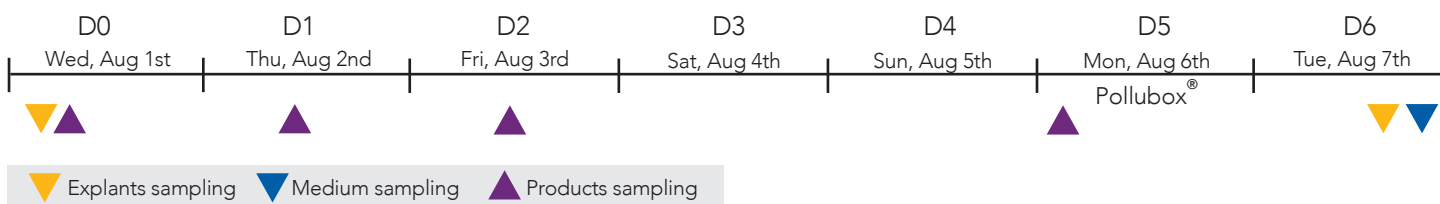
- *In vitro* test on keratinocytes
- Final measurement: Cell viability (MTT)
- Cells incubated 24 hours with CdCl<sub>2</sub> after treatment with Eurol® BT @ 0.0001% in water
- Protective percentage is calculated by comparing the percentage of cell viability against cadmium chloride with and without Eurol® BT

Independent of dosage level, the impact of applied CdCl<sub>2</sub> on cell viability is completely suppressed in the presence of Eurol® BT, which enables:

- Maintenance of cell viability at its maximum level
- Stimulation of cell proliferation



## "POLLUBOX®" EX VIVO STUDY (1% EUROL® BT IN WATER)

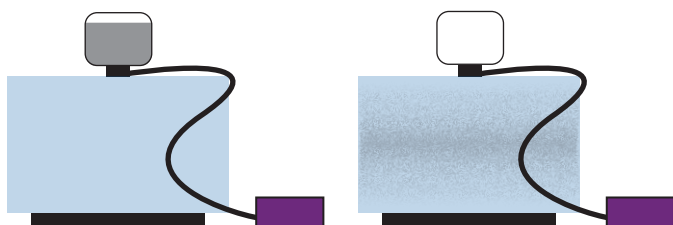


Malondialdehyde (MDA) is a product arising from lipid peroxidation of the cell membranes. The free radicals induced by oxidative stress (UVA, pollutants, heavy metals...) degrade the polyunsaturated lipids and generate hydroperoxides resulting in the formation of radical intermediates and aldehydes, particularly MDA.

- Ex-vivo test human skin explants
- Final measurement: MDA dosage
- On D0, D1, D2 and D5 (4 hours before pollutant exposure), Eurol® BT was topically applied
- On D6 (24 hours after pollutant exposure), 3 explants from each batch were collected to perform the MDA dosage and compare with D0

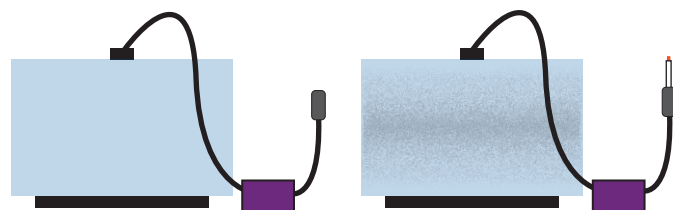
## EXPOSURE TO POLLUTANTS

Heavy metals + hydrocarbons + particulate matter exposure



On D5, 4 hours after product application, the explants of the batches "ML" were placed on the Pollubox® system with 900 µl per well of Hanks' balanced salt solution (HBSS), and exposed by spraying to a mixture of polycyclic aromatic hydrocarbons + heavy metals + particulate matter supplemented with NaCl 0.9% (µL of NaCl 0.9% per ml of pollutant solution) for 1.5 hours using 1.5ml.

Cigarette smoke exposure

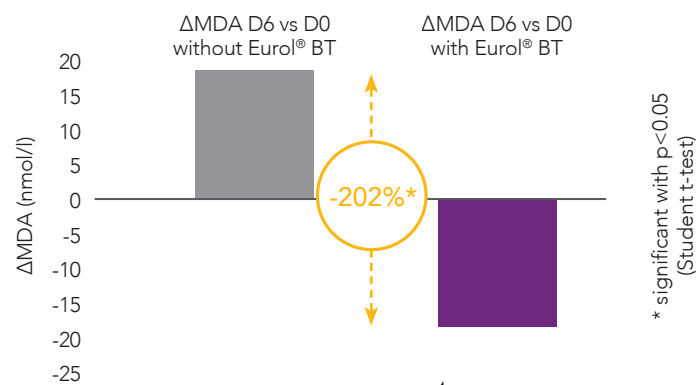


Following exposure to the pollutant mixture, skin explants of the concerned batches were kept in the Pollubox® device with 900 µl per well of HBSS and exposed to cigarette smoke (CS) coming from 2 cigarettes for 2 hours.

The control explants T and P were kept in 1ml of HBSS during this time. At the end of the pollutant exposure, all the explants were put back in 2mL of fresh BIO-EC's Explants Medium.

## RESULTS

Induction of MDA in the culture medium after pollutant exposure



Eurol® BT totally inhibits the lipid peroxidation (MDA) induced by pollutant mixture and cigarette smoke exposure.



**In vitro:** Demonstrated heavy metal protection activity at 0.0001%



**Ex vivo:** Protective effect against a reconstructed polluted environment (heavy metals, hydrocarbons, particulate matters and cigarette smoke) at 1%

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