



## IN VITRO TEST

### SAFETY AND TOXICOLOGICAL ASSAYS

- **Cytotoxicity assays on cosmetics**, ingredients and medical devices according to UNI EN ISO 10993-5.
- **Predictive assays for skin irritation** on cell monolayers (fibroblasts, keratinocytes).
- **Irritation test** on 3D reconstituted human epidermis (OECD439).
- **Skin irritation test** on 3D reconstituted human epidermis for medical devices (ISO 10993-23).
- **Irritation tests** on 3D reconstituted human epithelia (vaginal, gingival, oral, respiratory...).
- **Skin corrosion tests** (OECD 431, 435).
- **Eye irritation tests** (OECD 491, 492, 492B, 496).
- **Eye corrosion test** (OECD 460).
- **Skin sensitisation assay OECD 442D** (keratinosens).
- **Skin sensitisation assay OECD 442E** (IL-8 Luc Assay, hCLAT, GARDTM).
- **Skin sensitisation assay** on 3D reconstituted human skin (IL-18 RHE Assay, SENS-IS).
- **Phototoxicity assay** (OECD 498 on 3D epidermis).
- **Phototoxicity assay** (OECD 432 on cell monolayers).
- **Mutagenesis assay** (Ames) (OECD 471): screening and full test.
- **Ecotoxicity assay on Daphnia Magna** (OECD 202) and algae (OECD 201).
- **Biodegradability test** (OECD 301F).
- **Carcinogenesis in vitro assay** (OECD guidance document n. 231).
- **Mutagenesis assay in mammal cells** (Comet assay).

• **Assays for the evaluation** of hormonal endocrin disruptor effects (OECD 456, 458, 455).

• **Percutaneous absorption test with Franz cells Test** on human reconstituted 3D epidermis and epithelia, on ex vivo epidermis, on wounded epidermis etc.

• **Cytotoxicity assays** to estimate in vitro the oral LD50 value (OECD guidance document 129).

### EFFICACY TESTS

• **Antioxidant and anti- free radicals activity** on skin-derived cells (ROS analysis on keratinocytes and fibroblasts) following chemical or physical stress.

• **Direct antioxidant activity assay** (es ORAC TEST).

• **Antiaige activity/derma ridensifying activity**: mitogen effect, stimulation of the proteins synthesis, increase of the synthesis of proteins of the extracellular matrix (collagen, elastin, fibronectin, etc).

• **Barrier effect test** on human 3D reconstituted epithelia and epidermis.

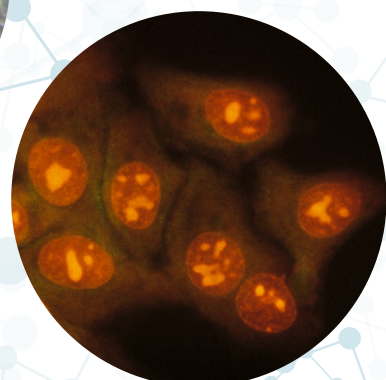
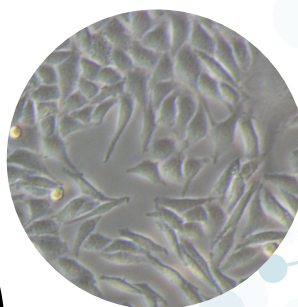
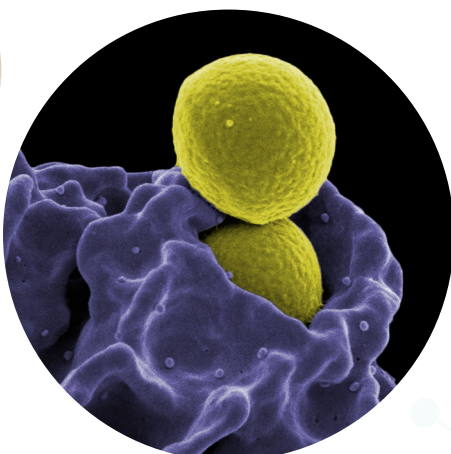
• **Evaluation of the keratolytic effect** with test on human 3D reconstituted epidermis.

• **Wound healing activity assays** on endothelial cells and fibroblasts (healing products and ingredients, anti-stretchmarks products).

• **Test for the evaluation of the effect** on melanogenesis (increase/reduction of the melanine synthesis by whitening or tanning products) both on monolayer cells or on 3D human in vitro pigmented epidermis.

• **Assay for the evaluation of tirosinase gene expression** on monolayer cells.

• **Assay for the direct evaluation of the modulation of enzymatic activity** (i.e. Tirosinase, Acetilcolinesterase, Collagenase and other metalloproteinases).





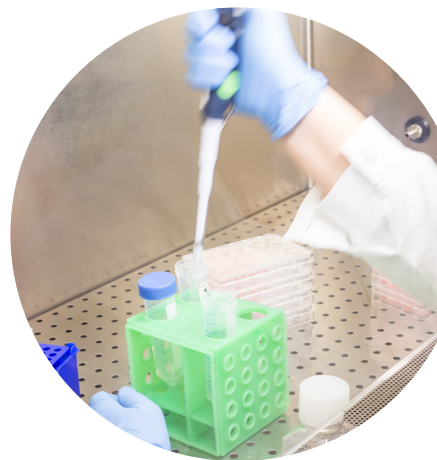
## IN VITRO TEST

- **Anti-inflammatory activity assays** on human 3D reconstituted epithelia and epidermis.
- **Test to evaluate the immune response** through analysis of specific mediators (i.e. Histamine, IL-1 $\alpha$ , TNF- $\alpha$ ) to evaluate anti-itching activity, inhibition of sensitisation, immunostimulating activity etc.
- **Test for the evaluation** of cell senescence.
- **Test for sebum control activity** (inhibition of lipase).
- **Evaluation of the inhibition of 5- $\alpha$  reductase enzyme** (hair growth, acne, sebum regulation).
- **Skin hydrating activity of cells** in monolayer or 3D reconstituted epidermis.
- **Anti-pollution efficacy** against smog and toxic chemicals.
- **Lipolytic activity on adipocytes.**
- **Inhibition of neo-angiogenesis** through analysis of VEGF expression (i.e. anti-couperose products).
- **Test to support barrier effect** towards heat (IR) on human 3D reconstituted epidermis.
- **Percutaneous absorption tests with Franz cells** on human 3D reconstituted epithelia and epidermis, on ex-vivo epidermis, on wounded epidermis to evaluate the permeation of ingredients, the efficacy of carriers or the barrier effect against permeation.
- **In vitro test of products for acne rosacea treatment** through the analysis of gene expression of markers involved in skin inflammation and linked to rosacea.
- **Customized protocols and R&D projects.**

## PHYSICAL PERFORMANCE IN VITRO ASSAYS

- **Mucoadhesion assay:** gravimetric test to verify and compare the physical adhesion properties of medical devices and products aimed to be used on mucosae.
- **Compatibility with condoms** according to ASTM D6771 or ISO 19671 standards through traction and explosion tests.
- **In vitro UVApf and broad spectrum UV protection** according to ISO 24443:2021 and to Boots Star Rating; in vitro water resistance and variants.
- **In vitro blue light protection and far UVA protection evaluations.**
- **Trichological tests in vitro on human hair locks** to support customized cosmetic claims Test like for example: resistance to break, combability, color strenght and many others.
- **Customized tests on hair treatments** according to the sponsor's needs.

**Quality systems and certifications:**  
GLP (Italian Ministero Salute), ISO 13485, ISO 9001.



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