



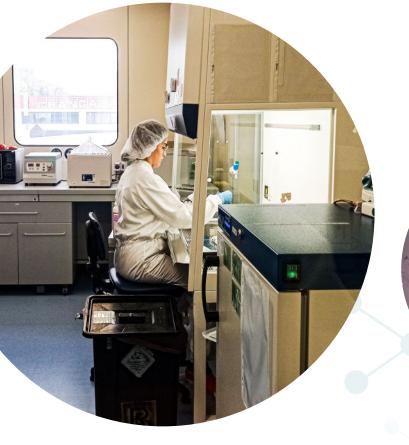
### MICROBIOLOGICAL ANALYSIS

### **BATCH CONTROL**

- Microbiological analysis on ingredients and finished products (cosmetics, medical devices and similar items): total viable bacteria count, yeasts and moulds count according to methods ISO (21149 e 16212), European Pharmacopoeia / USP, Cosmetics Europe, PCPC; Research of specific microorganisms according to ISO (21150, 22717,22718, 18416) European Pharmacopoeia /USP, Cosmetics Europe, PCPC.
- Validation of microbiological analytical methods on specific matrix according to ISO 11930, European Pharmacopoeia, USP and PCPC.
- **Bioburden on MD** according to UNI EN 11737-1 and sterility assays.
- Bacterial endotoxins search (LAL Test) according to USP and European Pharmacopoeia.
- Isolation and identification of contaminant strains in products or in the manufacturong premises through DNA /RNA sequencing or o MALDI-TOF or morphological analysis (moulds).
- **Test on surgical masks** UNI EN 14683:2019 annex D Bioburden; UNI EN 14683:2019 annex B; bacterial filtration efficacy (BFE) according to ISO 14683.

### PRODUCTS DESIGN (Cosmetics, Medical, Devices, Disincectants, Biocides, Textiles, etc.)

- **Challenge test** (Test for the efficacy of preservative system) according to methods ISO 11930, European Pharmacopoeia, USP, FDA, Cosmetics Europe, PCPC.
- **Isolation and identification** of contaminant strains of products or manufacturing premises to add them in customized challenge tests.
- Evaluation of D value for the determination of PAO (Period After Opening).
- In-use test in vitro or on volunteers to evaluate the microbiological stability and PAO
- Risk assesment for microbial contamination of cosmetic products according to ISO 29621.
- Evaluation of the antimicrobial efficacy of chemical disinfectants and antiseptics according to UNI EN 14885 in medical, domestic, istitutional and veterinary field.
- Evaluation of specific antimicrobial efficacy of products or ingredients towards strains of bacteria, fungi, viruses of dermatological or cosmetic interest (MIC, MBC, contact inhibition).
- Antibacterial activity test of textiles according to ISO 20645, ISO 20743 and ISO 22196
- Test for the evaluation of the action of microfungi on textile products according to UNI EN 1411.
- Virucidal activity of chemical disinfectants, antiseptics and similar products according to UNI EN 14476, UNI ISO 16777, ISO 21702, ISO 18184 (more additional virus strains, like coronavirus, are also available).









### MICROBIOLOGICAL ANALYSIS

- Evaluation of the efficacy of finish products or active ingredients on the skin microbiome modification through in vitro preliminary assays and test on slected panel of human volunteers.
- Search for bacterial endotoxins (LAL Test) according to USP and UE Pharmacopoeia.
- Evaluation of the efficacy of environmentale disinfection by aerodisperse methods according to UNI EN 17272:2020.
- Evaluation of the modification of bacterial adhesion towards mammal cells by medical devices, supplements or active ingredients.
- Mutagenesis assay (test di Ames) according to OECD 471.
- **Design of customized testing protocols** and method validations on the bases of the sponsor's needs.

Quality systems and certifications: GLP (Italian Ministero Salute), ISO 17025, ISO 13485, ISO 9001, GMP (Montreal site).

### **CONTROL OF MANUFACTURING PREMISES**

- Environmental analysis of aerodisperse microorganisms by air sampling with SAS SUPER IAQ "Surface Air System".
- Environmental analysis of the microbial contamination of surfaces in manufacturing plant, equipments and laboratories.
- Validation of cleaning and sanitisation procedures and protocols for manufacturing plant and premises in cosmetic and biomedical facilities.
- Design of testing protocols and customized validations on specific needs of the client.



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# **CHEMICAL-PHYSICAL ANALYSIS FOR QUALITY CONTROL**

- Instrumental analysis by HPLC and UHPLC with UV/ DAD/RID detector.
- Instrumental analysis by GC-FID, GC-MS, ICP-OES, FT-IR/ UATR, UV-VIS.
- **Quantification** of active ingredients and preservatives in cosmetics and medical devices.
- Analysis of multiresidal impurities and of trace contaminants in finished products and ingredients, like for example: phtalates, nitrosamines, VOC, substances listed in annex II of regulation (CE) 1223/2009.
- Chemical characterization of medical devices according to ISO 10993-18: extractables and leachables
- "Paraben free": ultra-traces analysis to support the claim "Paraben-Free" in finished coasmetic products, control of preservatives residure on manufacturing plants and « cleaning validation".
- Allergenes: analysis of allergenes in cosmetic finished products and ingredients from natural sources.
- "Nickel Tested": control on product batches and intermediates bulks to support the claim "Nickel Tested".
- Metals: analysis of inorganic contaminants in finished products and raw materials; toxic metals like Hg, Cd, As, Pb and sensitising metals like Ni, Cd, Co, Cr. Cosmetic relevant metals: As, Sb, Cd, Hg, Ni, Co, Cr, Pb e Cr VI.
- Metals: ICH guideline Q3D (R2) on elemental impurities Table 5.1: elements to be considered in the risk assessment oral, parenteral and inhalation exposure.
- Release test in artificial sweat or saliva for the detection of sensitising metals in cosmetic anhydrous

- and solid products; Release test in artificial sweat or saliva according to ISO 10993-12 for substances or impurities in medical devices.
- Validation of analytical methods according to ICH Guidelines for medical devices and for products to be marketed on the USA and European market.
- Test and analysis to support specific claims, customized according to the sponsor's needs.
- Test and analysis to support "cleaning validation" processes.
- Percutaneous and permucosal absorption test through Franz cells (OECD 428 and FDA methods): many epithelial and epidermis human models as well as synthetic membranes.
- **Stability assays** according to ICH for medical devices, to CIPAC for PMC e Biocides, to ASTM or PCPC for cosmetics. Chemical-physical and microbiological analysis.
- Packaging compatibility.
- Photostability of sun products with SUN TEST sunscreens analysis and evaluation of decay before and after Uv exposure.
- E-cigarettes and aromes: safety and toxicity analysis.
- Botanical extracts analysis.
- Control of manufacturing for batches of PMC and Biocides.
- Quality control: analysis of osmolarity, surface tension, viscosity, density, drop point, softening point etc. on ingredients, bulks and manufacturing product batches.







### CHEMICAL-PHYSICAL ANALYSIS AND ASSAYS TO SUPPORT PRODUCT DEVELOPMENT

- **Stability assays** according to ICH for medical devices, to CIPAC for PMC e Biocides, to ASTM or PCPC for cosmetics. Chemical-physical and microbiological analysis.
- Compatibility with packaging, analysis of impurities and contaminants released or absorbed by the packaging components.
- **Photostability of sun products** with SUN TEST sunscreens analysis and evaluation of decay before and after Uv exposure.
- Chmical characterization of medical devices and components of for BEP/BER (Biological Evaluation Plan and Report).
- Metals: ICH guideline Q3D (R2) on elemental impurities Table 5.1: elements to be considered in the risk assessment oral, parenteral and inhalation exposure.
- Release test in artificial sweat or saliva for the detection of sensitising metals in cosmetic anhydrous and solid products; Release test in artificial sweat or saliva according to ISO 10993-12 for substances or impurities in medical devices.
- Validation of analytical methods according to ICH Guidelines for medical devices and for products to be marketed on the USA and European market.
- Test and analysis to support specific claims, customized according to the sponsor's needs.
- Test and analysis to support "cleaning validation" processes development.
- Percutaneous and permucosal absorption test through Franz cells (OECD 428 and FDA methods): many epithelial and epidermal human models available as well as synthetic membranes to select according to the product destination and use. Identification and development of the analytical method.

- **E-cigarettes and aromes:** safety evaluation and toxicological analysis for components and ingredients with in-use simulation.
- **Characterisation of botanical extracts** and development of the extraction method for the industrial scale-up.
- Mucoadhesion assay: adhesiveness test to verify nd compare the physical adhesion properties of medical devices and products aimed to be used on mucosae.
- **Compatibility** with condoms according to ASTM D6771 o ISO 19671 standards through traction and explosion tests.
- In vitro UVA pf and broad spectrum UV protection according to ISO 24443: 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.
- UV protection test for Medical adhesive and Textiles according to EN 13758.

Certificazioni e sistemi di qualità: BPL (Ministero Salute), ISO 17025, ISO 13485, ISO 9001.



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### **IN VITRO TEST**

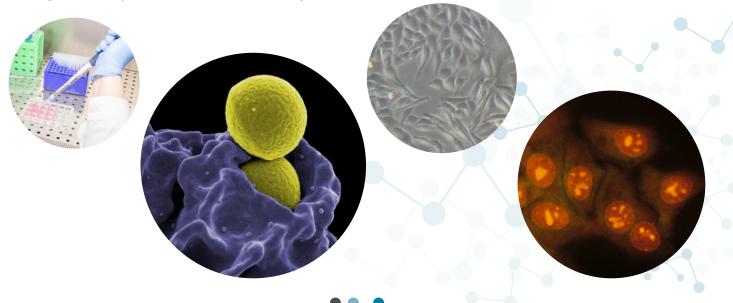
### SAFETY AND TOXICOLOGICAL ASSAYS

- 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, gengival, 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 reconstitued 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 disr uptor 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 aestimate in vitro the oral LD50 value (OECD guidance document 129).

### **EFFICACY TESTS**

- Antioxidant and anti- free radicals activity on skinderived cells (ROS analysis on keratinocytes and fibroblasts) following chemical or physical stress.
- Direct antioxidant activity assay (es ORAC TEST).
- Antiage 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 keratolitic effect with test on human 3D reconstituted epidermis.
- Wound healing activity assays on endothelial cells and fibroblasts (healing products and ingredients, antistretchmarks 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 enzimatic activity (i.e. Tirosinase, Acetilcolinesterase, Collagenase and other metalloproteinases).





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TRAINING



### **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, immunistimulating activity etc.
- Test for the evaluation of cell senescence.
- Test for sebum control activity (inhibition of lipase).
- Evaluation of the inhibition of 5-α 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.
- Lipolitic activity on adipocytes.
- **Inhibition of neo-angiogenesis** through analysis of VEGF expression (i.e.anti-couperose products).
- Test to support barrier effact towards heat (IR) on human 3D reconstituted epidermis.
- Percutaneous absorption tests with Franz cells on human 3D reconstituted epithelia and epidermis, on exvivo 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 o 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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### COSMETOLOGICAL AND CLINICAL TESTING

### **SAFETY TESTING**

- Patch test, Repeated Insult Patch test, Patch test on sensitive skin, for cosmetics and similar products.
- Evaluation of sensitisation risk and claim hypoallergenic with HRIPT (Human Repeat Insult Patch Test) on cosmetic products.
- Dermatological, ophtalmological and gynaecologicaliln -use tests on voluteers to evaluate the tolerabilty of cosmetic products.
- Sun product tests: SPF and Water Resistant (ISO 24444: 2019 Amd 1.2022, ISO 16217/18861:2020 FDA vol 76 n° 117 of 17 June 2011) SPF UVA PPD according to ISO 24442: 2022, test for SPF long lasting, test for SPF according to Australian method AS/NZS 2604: 2021.
- SPF on wet skin, SPF Water/Sand/Sweat resistance, SPF persistence for sun products.
- Photo-patch test for cosmetic products.

### **EFFICACY AND PERFORMANCE TESTING**

- Tests for short and log-term skin moisturization throug corneometry and/or TEWL measures.
- In-use test on sleceted human volunteers panels for the evaluation of the efficacy of cosmetic products under medical supervision (dermatologist, allergologist, gynaecologist, ophtalmologist, , dentist etc.).

- Sensorial analysis and administration of questionnaires to selected panels of healthy volunteers.
- Anti-wrinkles test through quantitative analysis of profilometry and skin imaging with 3D blue laser scanner (DERMA TOP-Blue) or with 3D imaging (ANTERA).
- Skin elasticizing, firming/tonifying activitiy tests through skin probes.
- Evaluation of skin barrier performance (TEWL Trans Ephitelial Water Loss), Arm Wash Test.
- Test for anti-eye and anti-eye circles activity through volumetric analysis, skin dermatograhy and skin colorimetry.
- Skin depigmentation, belaching and lighteningh tests through Chromameter or Antera imaging.
- Skin darkening and increase of tanning speed test.
- Anti -cellulitis activity test through Antera or Derma TOP-blue .
- Test for skin sebum reduction through Sebometer.
- Comedogenesis assays.
- Anti perspirant activity test, 24 h or 48 h lasting (FDA method with sauna) and deodorizing activity (Sniff Test).
- Skin soothing activity test with irritation induced by chemicals or with UV-rays
- Long-lasting test for make-up for face, lips and eyelash.







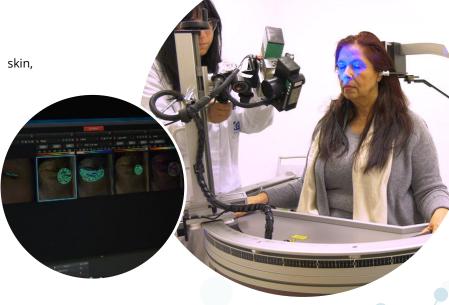
### COSMETOLOGICAL AND CLINICAL TESTING

- Lip-volumizing activity test for lip and eyelash make-up.
- Efficacy tests for trichological products: anti-dandruff activity, hair fall prevention and hair growth activity with TrichoScan, hair viability, color strenghtness etc.
- Test for Sun products: SPF , Water Resistant and Very water Resistant (ISO 24444: 2019 Amd 1:2022, ISO 16217/18861:2020, FDA vol 76 n° 117 of 17 June 2011), SPF UVA PPD according to ISO 24442: 2022, SPF long lasting Test, test SPF according to Australian method AS/NZS 2604: 2021.
- SPF on wet skin, SPF Water/Sand/Sweat resistance, SPF persistence.
- Evaluation of the antimicrobial efficacy of chemical disinfectants and antiseptics according to UNI EN 14885 in medical, domestic, istitutional and veterinary field
- Usability tests for medical devices
- Efficacy studies for supplements for healthy skin, mucosae and cutaneous annexes.

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

#### OTHER STUDIES

- Post-marketing clinical studies on medical devices according to UNI EN ISO 14155.
- Medical and technical assessments of ethical clearance also for external studies
- Assessment by an indipendent Ethical commette.
- Patients recruitment for clinical investigations of medical devices and IVD.
- **Pediatric expertises** for cosmetic products intended for childrens and babies use.



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# **CONSULTING, REGULATORY ASSISTANCE AND EDUCATION**

#### COSMETIC

- Cosmetic Product Safety Report according to Regulation (CE) 1223/2009, with signature of a European Registered Toxicologist (ERT).
- PIF Product Information File for cosmetics according to Regulation (CE) 1223/2009.
- Cosmetic Product Notification on the web portal CPNP.
- · Formulation design and development of cosmetic finished products.
- Development of extraction methods for botanicals.
- **R&D** projects and support for experimental patents.
- Assistance for cosmetic labelling, according to Regulation (CE) 1223/2009, and environmental labelling.
- Assistance for new cosmetic plants and laboratories start-up.
- Safety Assessment for ingredients and raw materials.
- INCI assignment for new raw materials, MSDS writing.
- Scientific marketing and communication.
- Validation of methods and procedures for cleaning and sanitization of premises, equipment and plants.
- Technical education (toxicology, microbiology, cosmetic testing, regulatory, ISO 22716, design) online and on site (Abich Academy).
- Customized education and training on the companies'

#### **MEDICAL DEVICES**

- Assistance in the management of changes from Directive CEE 93/42 (MDD) to Regulation (UE) 2017/745(MDR).
- Support to manufacturers for the feasability of new medical devices according to MDR.
- Toxicological and Pharmacokinetic evaluations (ADME) on bibliographic data with the signature of a European Registered Toxicologist (ERT).
- Assistance as Person Responsible for the Regulatory Compliance (PRRC) ex art. 15 MDR.
- Biological Evaluation Plan with a chemical and biological testing strategy and Biological Evaluation. Report (BEP and BER) according to ISO 10993-1.
- Technical file according to annex II MDR.
- Risk assessment according to ISO 14971.
- GSPR Table redaction.
- Clinical data Evaluation Plan and Report (CEP e CER).
- Design and assistance as a CRO in post-marketing and pre-marketing clinical studies.
- Assistance in registration in the EUDAMED data bank for medical devices manufacturers and for products.
- Assistance in medical devices labelling according to ISO 15223, ISO 20417 (ex ISO 1041).
- Support and consulting for post marketing surveillance (PMS, PMCF e PSUR).
- Design and R&D for topical products; manufacturing of pilot batches.
- Customized regulatory consultancy.
- Validation of sterilisation methods.
- Technical training and education (product files, ISO 13485, sterilization, classification, MDR compliance etc) online and on site (Abich Academy).
- Customized training at the manufacturer's site.









### CONSULTING, REGULATORY ASSISTANCE AND EDUCATION

# MEDICAL-SURGICAL AIDS (PMC) AND BIOCIDES

- Assistance in the design of safety and efficacy studies.
- Technical data sheets and MSDS writing.
- Labelling.
- Assistance in the notification to Ministero della Salute and new products filing.



### **ABICH ACADEMY**

Technical and strategical courses for cosmetic, biomedical, textiles and chemical companies.

Webinar and on site training (in Milan, Vimodrone)

- PIF and CPSR Reg. (CE)1223/2009.
- Technical files for MD.
- MDR Regulation (UE) 2017/ 745 and MDD Directive CEE 93/42.
- Microbiology.
- Stability.
- In vitro and pre-clinical tests.
- Assays on human volunteers.
- Clinical investigations for MD.
- Good Manufacturing Practices (ISO 22716, ISO 13485).
- Risk assessment.
- · Design of topical products.
- Customized training at the client's sites.

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