

Clinically supporting 'anti-age' and 'pro-age' claims

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Claims of personal care evolve following trends and various innovations in the field of the active ingredient development, the finished product formulation and the way both are evaluated, demonstrating their performances. Since 2014, the cosmetics industry is gradually leaving the era of anti-ageing behind. Today, most consumers are more in the mood for a well ageing, slow ageing or pro ageing approach.

The philosophy of the 'pro-ageing' movement has sought to remove all 'anti' claims because, according to this concept, women over 50 are not interested in looking younger; they want to look healthy and be honest about their age. Some brands have used the idea of "improves the appearance of skin quality", and "restore the skin comfort", for example. A new vocabulary of renewal, regeneration, plumpness and "glow" now dominates the language of the beauty industry.

Beauty then becomes more integrative, it will globalise wellbeing, the silhouette, the sleep quality or the lifestyle, resulting in a different look with new codes and expressions. Consumers are going to take action to preserve their tonicity, elegance, silhouette. In this quest for mindful beauty radiance, what



women expect from cosmetics is emotional pleasure, sensoriality. It is all about supporting the ageing process rather than fighting the signs of ageing, with skin care products supporting a 'pro-longevity' life enhancer.

The exposome process beyond the ageing mechanisms

The phenomena influencing the skin ageing are now well known. Today, two main factors that influence skin ageing are considered,

one of which is intrinsic, the second extrinsic. This is how the 20th century differentiated the environmental factors called exposomes, the most important which are now sun and pollution exposure, and factors related to the biological clock, i.e. the genome. External criteria are a broad list: the sun above all, but also tobacco, sun, pollution, food, alcohol, cigarettes, medicines...

During consultations with the elderly, the signs of ageing observed are mainly: skin atrophy, xerose, various keratoses. The skin abnormalities that characterise photoageing depend on the light or dark phototype. Light skins become cut instead, dark skin becomes thicker. UVB and UVA ultraviolet rays cause severe damage to the dermis. The exposome can be summed up mainly by the oxidative stress caused by different environmental conditions. The pro-age treatment can boost blood circulation, encouraging collagen production and helping lift, plump and define contours for a firmer appearance. Moisturising ingredients are used for immediate and long-term effects, as it increases skin elasticity and firmness while gently exfoliating dead skin cells. Other ingredients work as lymphatic drainers to change the shape of the cheekbones and add definition.

The major consequences concern the human in its temporality and for the skin mainly changes in the epidermis-dermis-hypodermis exchanges.

The growing complexity of lifestyles in the last decade is impacting the way anti-ageing care products are being used globally. In another way, the industry anticipates the latest and global technological evolution such as genomics, A.I, the Internet of Things, to develop, product and market these specific skin care products and answer the regulatory constraints and the consumer demand.

Studies of skin age perception

To look more closely at the category of anti-ageing, it represents the most numerous, precise and specific claims of all cosmetic products. In addition to the geographical variations of their regulatory

Table 1: Antiageing claim substantiation terms

	Action	Claims
Short Term	Care	anti-wrinkle
		moisturising
		anti-oxidant
		lifting
		complexion and radiance
		Strengthen the epidermal junction
	Protection	anti-UVA+UVB
		anti-blue light
		anti-infrared
		anti-free radical anti-oxidant
	anti-pollution	
	DNA protection	
Long Term	Care	anti-sagging,
		anti-age spot
		oval face
		resculpting
		anti-pollution

Table 2: Anti-ageing claim substantiation. Clinical Assessment

Studied effect	Methods and Devices
Biomechanical properties	Cutometer, Cutiscan (C+K), Dynaskin and SkinFlex (Orion), Ballistometer (Dia-Stron)
Wrinkles and relief	AEVA-HE, Dermatop-HE (Eotech), ColorFace (Newtone technologies), Clarity 3D (BTBP), PrimosLite-Primos 3D (Canfield), Visioscan VC 98 (C+K), Antera 3D (Miravex), C-Cube (Pixience)
Face morphology and Volume	ColorFace (Newtone), AEVA-HE, Dermatop-HE (Eotech), Vectra, Olé, Primos (Canfield), Observ 320 (Innofaith), HeadScan (Orion)
Hydration	Corneometer and MoistureMap (C+K), Epsilon (Biox), DPM 9003 (NovaTech), Moisturemeter SC (Delfin), DermaLab (Cortex), Skicon-200....
Barrier function	Tewameter® TM 300 and Nano (C+K), Aquaflex (Biox), Evaporimeter, Vapometer (Delfin), Dermalab (Cortex)...
Age-spots	Mexameter® MX 18, Colorimeter (C+K), SkinColorCatch (Delfin), TiVi 70 Skin Colour (Wheelsbridge), C-Cube (Pixience), Chromameter (Minolta), SpectraCam (Newtone)
Gloss, complexion and radiance	ColorFace (Newtone), Goniolux (Orion), Skin GlossyMeter (C+K), SkinGlossMeter (Delfin),
Skin surface	SpectraCam (Newtone), Epsilon (Biox), Dermatop-HE (Eotech), Visia-CR (Canfield), Visioface and Visioscan (C+K), SiaScope (MedXhealth), ViewSkin, C-Cube (Pixience), Antera 3D (Miravex), TiVi80 (Wheelsbridge), Clarity 3D Mini (BTBP), Neo Voir II (C-Lab Co), SIAScope (Medxhealth), and all videomicroscopes,,,
Skin structure	Dubskin-scanner, Dermatop-HE (Eotech), LC-OCT (Damae), Antera 3D (Miravex), Sonde Raman (Horiba Jobin), Vivascope (Mavig), Vivosight (Michelson), TiVi80 (Wheelsbridge), Dermascan (Cortex)
Skin Molecular Content	LC-OCT (Damae), Sonde Raman (Horiba Jobin), FibroTX (Eotech), Raman spectroscopy gen2-SCA (RiverD), Genomic, metabolomic, proteomic analysis
Global Aspect	"Visual and tactile objectivation with Scoring by technician experts and dermatologists using specific scales and photos, Sensory analysis by trained panels or naïve subjects, Emotions evaluation by I.A, Consumer testing"

status according to each country, their performance generally proclaim several effects on mechanisms which are:

- Targeted: skin relief, collagen, cellular communication, Dermo-epidermal junction...
- Localised: Crow's feet, lion's wrinkles, oval face...,
- Focused at different skin depths: epidermis, dermal-epidermal junction, dermis and
- Interconnected in various mechanisms: cellular and biochemical (microbiota, keratinocytes, fibroblasts, melanocytes, nervous receptors...)

More than classical efficacy on the skin surface and structure, skin care dedicated to mature skin reveals improvements in emotional, wellbeing, sensoriality properties, but the cutaneous signs of ageing are still seriously studied with a great accuracy as a tangible proof of the product's performance.

The promise is a recovery of the tissue elasticity, the face's shape, the plump and voluminous appearance. A list of the principal signs of ageing influencing age perception can be established although their importance differs among different ethnicities. Skin tone is generally considered a sign of ageing among Asians, with skin dullness and hyperpigmentation. Among Caucasians

wrinkles – particularly around the eye and forehead area – are the important signs. Sagging skin around the mouth and jawline is also described earlier than other ethnicities.

Anti-ageing claims, because term is vast, include among others: firmness, radiance, anti-sagging, energising, improves barrier function, increases cellular renewal, attenuates senescence spots,...

We can categorise the skin ageing signs:

- Skin colour and pigmentation: Redness, tone, radiance, age spots, circles under eyes
- Skin topography: Crow's Feet, furrow Lines, upper lip, under-eye, forehead wrinkles, roughness
- Skin structure: thickness, epidermal junction, barrier function...
- Volume: Face, nasolabial sagging or smile lines, puffiness, eyelids...
- Biomechanical properties: Firmness, elasticity...

The various ways to objectivate this claim

A great possibility regarding the analysis of pro-age performance is offered to cosmetics brands to clinically demonstrate these effects via biometrological and scientific measures.

The conduct of the efficacy studies refers

to the regulation in each world zone and sometimes each country. In Europe, the reference is the European regulations for cosmetics principally with the common Product Information File (P.I.F). To substantiate product claims people must respect the 6 common criteria without specific norms for each test (except sensory analysis and sun protection index cf. ISO) and people can follow guidelines for human testing such as EEMCO, Good Clinical Practice. These scientific objectivation processes protect the consumer from misleading claims and preserve the credibility of the cosmetic industry.

In the concept of 'wellbeing' the notion of 'anti-ageing' is little thought of, one might as well say 'pro-age' or 'plain age', the condition of the skin being considered in its entirety. The identification of the properties of these products uses a sensory approach, sometimes neurosensory and holistic. The feeling, and the impact on the quality of life are measured.

The investigators can choose the tests between 5 main categories: consumer tests, sensory or emotional analysis, biometrological studies, clinical scores, or people can also design the protocol of the studies combining 2 or 3 of them.

In Table 2, all the devices enabling a

quantitative, semi-quantitative or imaging objectives are listed. Depending on the target of the skin care, there are many ways to validate the performance of each product. The investigators can choose among the various studied effects and design a multi-parametric protocol.

Whether for small or large areas, these biometrological techniques always look for perfect data acquisition with the best re-positioning, the higher resolution, the quicker capture time, and the automatic rotation system.

We advise investigators to take time with the CROs to design each protocol and define precisely the inclusion criteria, the time measurements, treatment conditions, the optimal device. It never wastes time briefing these essential elements.

From trends to high-tech

In the SkinObs 'Clinical Testing' platform, using the advanced filter of the technology level, we can differentiate the 80 methods corresponding to the objectivation of the anti-ageing claims:

- 8 "Very high-tech" methods offered by 15 CROs worldwide,
- 24 "High-tech" methods offered by 33 CROs worldwide,
- 47 "Middle high-tech" methods offered by 33 CROs worldwide,

- 9 "standard" methods offered by 33 CROs worldwide,

The current trend of products claiming action on the 'microbiota' belongs to a global trend of respect for the skin ecosystem. Measurements of the effects of pre- or probiotic products are complex due to the nature of possible interactions even if ultra-sophisticated genomic methods are available. Demonstrating a true effect with an explanation of a proven mechanism is underway. Different manufacturers of ingredients take up the issue and try to answer this very fashionable question.

Finally, the other major 'anti-pollution' trend is integrating both concepts of 'anti-ageing' and 'wellbeing'. A protection component to pollution becomes tacitly a preventive anti-ageing activity, as pollutants are genuine oxidative factories. And in parallel, the 'wellbeing' component is evoked through purifying, cleaning and repairing effects in a post-pollution treatment.

The bright future of skin science

The various high-tech biometrological measurements give the opportunity to connect technology with new digital personalisation devices from the shop to the bathroom. This connection between objectivation and the digital way of

choosing and buying may bring cosmeticians closer to the reality of marketing.

Now the imaging of the skin from the centimetre to the nanoscale is more and more crucial, measuring several elements and the structure of the skin: water, lipids, dermal-epidermal junction, extracellular matrix, fibres...

Whether for ageing, radiance, biomechanical properties or moisturising, several techniques look for higher resolution, larger measurement area, non-invasive, no-contact and direct methods. The algorithms and the statistics are the principal future contribution of the success of these new technologies.

The combinations of classical biometric measurements with more high-tech devices and specific biomarkers can provide better understanding of the organisation of the skin structure and its functions. It increases the accuracy of the measurement and gives new perspective in the claim substantiation of cosmetics and its application to ethnic diversity.

The era of connected devices for skin diagnosis or DNA analysis combined with personalisation treatments sounds great for skin care evaluation. These digital tools enable the development of new products to answer the new requests of consumers. PC

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