

DERMASCOPE

The Encyclopedia of Aesthetics & Spa Therapy

December 2014



Technology

Body Treatments

The Official Publication of Aesthetics International Association

The Ingredients *Column*

A Year in Review: Lessons From 2014



by Irena James

This year has been an exciting one for the skin care industry. Trends, such as multifunctionality, age-defying, barrier-repairing, and hydrating, as well as nature-inspired ingredients that dominated skin care launched in 2013, have continued their strong influence into 2014. They solidified their dominance with the arrival of fresh innovations, new research, and more precise evaluation methodologies.

Tried and True, as Good as New!

Beauty products offering multiple benefits have been in high demand throughout 2014, as we saw an increased focus on products that perform at least two functions, if not three or four. Anti-aging products that address a wide range of concerns, including moisturization, uneven skin tone, hyperpigmentation, dark spots, dryness, sun damage, firmness, and expression lines, as well as products incorporating next generation antioxidants, peptides, vitamins and plant extracts, continued to be in high demand. Ultraviolet protection also continued to be one of the key benefits consumers looked for in multifunctional products, both skin care and makeup. Skin care products have started to offer an array of ingredients that go “beyond ultraviolet protection,” focusing on new areas of concern for skin damage, such as those caused by infrared (IR), which accounts for more than 50 percent of solar energy reaching the skin, and high energy visible (HEV) light, whose radiation may be as harmful as the damage caused by UVA and UVB light combined. We finally understand a lot more about what we have suspected all along – that we are not safe indoors as computers, flat-screen televisions, flat-screen mobile phones, energy efficient cool white or full spectrum lights provide constant exposure to damaging high-energy visible light. Liposhield™, a special form of fractionated melanin designed specifically to shield the skin from high energy visible light by reducing oxidative stress, is starting to make its way into high performance formulas, while microfine titanium dioxide and zinc oxide also offer promise in lowering the damage caused by high energy visible lights.

Corneotherapy, Emotions, and Epidermal Barrier Integrity

Corneotherapy, an old term coined by the internationally-acclaimed research dermatologist Albert Kligman, M.D. in the 1960s made its return this year. Corneotherapy refers to the

process of maintaining a healthy stratum corneum and keeping the barrier intact, as well as repairing damaged stratum corneum when needed. Corneotherapy is regarded as the cornerstone of healthy skin care and delayed signs of aging. The stratum corneum, an integral part of the skin’s barrier, is finally given the recognition it deserves as the sensory systems in epidermal cells and their role in the maintenance of barrier function and skin-brain connection is better understood. Researchers hypothesize that a damaged barrier not only causes dryness, inflammation, chronic sensitivity, and accelerated aging, but it can also affect one’s emotional state. Epidermal cells produce bioactive molecules (cytokines, neuropeptides, oxytocin, and glucocorticoids) in response to barrier impairment or insult, such as environmental dryness or ultraviolet radiation, to regulate skin physiology and emotional condition. Dermatologists have found a link between the severity of atopic dermatitis and the level of patients’ depression or anxiety, while elevated fatigue and depression have been reported in patients with psoriasis. The deterioration of skin barrier function can cause a depressed mental state and vice versa, creating a vicious cycle. Those with skin conditions associated with an impaired epidermal barrier have reported itching, sleep disturbance, and the appearance of anxiety.

Innovative technologies geared towards improving barrier function by specifically targeting the most intricate workings of the epidermal barrier lipids, cells, and proteins are starting to dominate high performance and high-end formulations. Rubixyl, a bio-mimetic peptide from Induchem, is a perfect example of this category of ingredients. This peptide targets a lesser-known mechanism essential for maintaining healthy barrier function, a group of cellular membrane receptors called delta-opioid receptors, which control the differentiation of skin cells. Upon aging, various biological processes, such as stress and free radicals, deactivate these receptors and this is one of the reasons why our skin shows visible signs

of aging. Applying Rubixyl on the skin protects the receptors from being deactivated and skin cells reactivate their division, leading not only to a stronger, healthier barrier, but also to visible skin rejuvenation, decreased wrinkle depth, and refined skin texture.

Biomimetics: Inspired by Nature, Developed by Science

Beauty ingredients that mimic cellular bio functions have become some of the most helpful group of ingredients we have at our disposal to create effective, consumer-friendly products. Fabrice Lefevre, scientific marketing manager with Induchem, explains, "A biomimetic molecule is a copy of a biological key that your body is normally producing to activate some responses. If your skin has lost the initial key for reasons such as aging, stress, et cetera, the biomimetic molecule will replace the lost key and activate the right responses again."

Biomimetic ingredients include peptides that reactivate cellular division and strengthen the dermo-epidermal junction in skin, sugars that reactivate the synthesis of extracellular matrix, amino acids that improve skin hydration, biomimetic natural moisturizing factors, plant derived sources of omega 3, 6 and 9 for skin barrier repair and healthy cell membranes, and biomimetic hyaluronic acid that improves moisturization and wrinkle reduction.

Ingredients such as lipochroman (a synthetic molecule similar in structure to γ -tocopherol offering the same antioxidant effect in the skin and preventing glycation), as well as Venuceane (obtained by fermentation of a bacterium and used to reinforce the barrier function and protect the skin against infrared radiation, improving moisturization and preventing visible signs of photo-aging), are both considered biomimetic.

Resistem, a plant extract obtained by the stem cell culture of *globularia cordifolia* that helps the skin build its own anti-aging defense system, is another representative of the ever-growing biomimetic ingredient category. Plant stem cell research and development is one of the most promising and exciting frontiers in skin care, offering solutions for just about any skin care issue from aging skin to everything in between. This year has certainly seen the most exceptional number of new product launches featuring one or more plant stem cells, a trend that continues to experience strong momentum. According to the research report *Global Cosmeceuticals Market Outlook 2016* from business consultancy company RNCOS, from 2012 to 2016, plant stem cell technology is expected to propel the global cosmeceutical market forward at a rate of 7.7 percent.

Aesthetics and Performance

It is apparent that skin care affects both physiological and psychological well-being. Touching facial skin during a regular skin care routine can become a ritual that forces an individual into a state of relaxation. Clients can learn to establish a positive emotional connection with their products and look forward to their skin care routine every night. Since these attri-

butes are essential to achieving skin benefits and can greatly influence client compliance, the sensory profile of a product or 'skin feel' is not be underestimated... This is especially important for serums and moisturizers, product categories for which clients are willing to pay the most for and stay loyal to the longest. An elegant formula with smooth and pleasant application, relatively fast absorption and a non-sticky, silky after-feel will prompt clients to use the product frequently enough, until long-term, visual benefits start to kick in. Product developers are routinely adding hyaluronic acid spheres and other instant plumpers to create a hydrated, healthy look upon application. Silicone emulsifiers, elastomers, and fluids play a crucial role in long-term hydrating effects, breathable barriers, and moisture-locking mechanisms. The skin feel and overall sophisticated aesthetics are also a crucial feature of anti-aging products.

The Drivers of Future Innovation

It is estimated that the beauty and personal care industry will reach \$630 billion by 2017. This level of projected growth is largely driven by the success of multitasking anti-agers, a category that shows no signs of slowing down. Multifunctional products targeting multiple signs of aging not only provide better value for our money, but are better suited for the hectic lifestyles of women today. As the number of consumers over 50 is set to rise by more than 10 million by the end of 2017, demand for this product category will be driven even further by the aging United States population. This alone will further encourage brands and product developers to continue seeking the next big thing and even more exciting ingredient technologies in 2015 and for many years to come.

References:

1. Altemus, M., Rao, B., et al., (2001). Stress-induced changes in skin barrier function in healthy women, *117(2):309-17*.
2. Brooks, KP, Robles, TF., et al., (2012). Attachment, skin deep? Relationships between adult attachment and skin barrier recovery.
3. Denda, M., Takei, K., et al., (2013). How does epidermal pathology interact with mental state? *80(2):194-96*.
4. Hashim, Joshua, (2014). Beauty Ingredient Innovations and Trends, *GCI Magazine*.
5. Hickman, Silvia, (2014). Plant Stem Cells: An Emerging Technology, *Skin Inc. Magazine*.
6. Penning, Abby, (2013). Biomimetics: Beauty Ingredients That Mimic Bio Functions, *GCI Magazine*.
7. Steventon, Katerina, Ph.D., (2013). The Feel Good Factor in Skin Care, *GCI Magazine*.

Irena James, director of product development for YG Laboratories, has educated generations of students and industry peers on skin care ingredients, treatment protocols, and brand development. James' versatile experience in the skin care industry spans over 20 years, during which she worked as an aesthetician, educator, territory sales manager, and director of business development in the EU. She is an assistant instructor at the UCLA Extension Cosmetic Sciences Program and a member of BIW and the Society of Cosmetic Chemists.

