Narcissus Tazetta and *Schizandra Chinensis* to Regulate 'Youth Gene Clusters'—An In vitro Analysis

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Skin aging is a multifactorial process regulated by various biological mechanisms. It is often accompanied by the appearance of skin dryness, wrinkles, sagging, uneven skin tone, mottled pigmentation, etc.; and research has shown that each of the biological mechanisms responsible for a particular skin aging attribute is regulated by genes. Thousands of genes are expressed in the epidermis and their collective expression is known as the gene expression profile. Groups of genes coding for proteins having similar or complementary functions may be responsible for regulating specific skin aging attributes. These genes may be categorized into groups of "functional clusters"; herein, gene clusters associated with anti-aging activities are referred to as *youth gene clusters*.

Recent research also has shown that topical as well as nutritional materials may influence the gene expression profile of the skin to reflect a more youthful profile. The present article describes in vitro analyses of a blend of two extracts, namely *Narcissus tazetta* bulb and *Schizandra chinensis* fruit, for such effects. *Narcissus tazetta* bulb extract, a bulb extract from the daffodil plant family, has previously been shown to delay cellular proliferation when applied topically. In addition, *Schizandra chinensis* fruit extract, a red berry fruit extract belonging to the magnolia plant family, has been used for decades in Chinese medicine to promote general well-being and vitality when taken orally. This has led to the hypothesis that when combined, the two extracts may change the activity of genes in the epidermis to reflect a more youthful gene expression profile, which is assessed here. Note that the individual actives were not tested; future research is necessary to determine whether they have similar effects alone.

Materials and Methods

A combination of 0.02% *Narcissus tazetta* extract and 0.01% *Schizandra chinensis* fruit extract were tested in vitro using human full-thickness 3D epidermal skin equivalents. These amounts were chosen based on results from in-house clinical testing, where this specific combination was used in finished formulations (data not shown).

FTEE cultures: A 100-µL sample of the test article was applied to each culture and incubated for 24 hr. Following incubation, the cultures were thoroughly washed with sterile phosphate buffered saline (PBS) to remove test materials and placed in RNAlater solution for gene expression analysis. The tissues were incubated for 2 hr at room temperature then stored at 4°C until processing.