

Firming and Antiaging Effects of a Novel Facial Aqueous Serum Containing L-Ascorbic Acid

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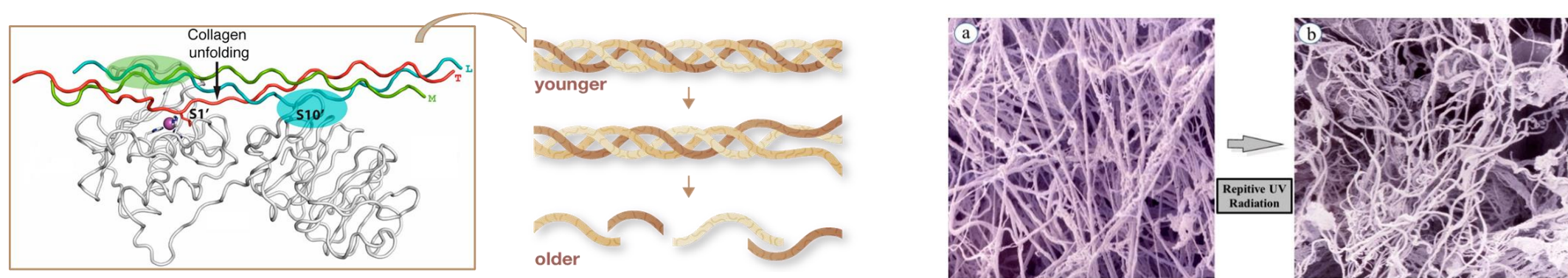
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Introduction:

With age the skin's natural rejuvenation process slows drastically and the skin becomes thinner, drier, and less elastic. [1] Skin ageing is influenced by several factors including: [2]

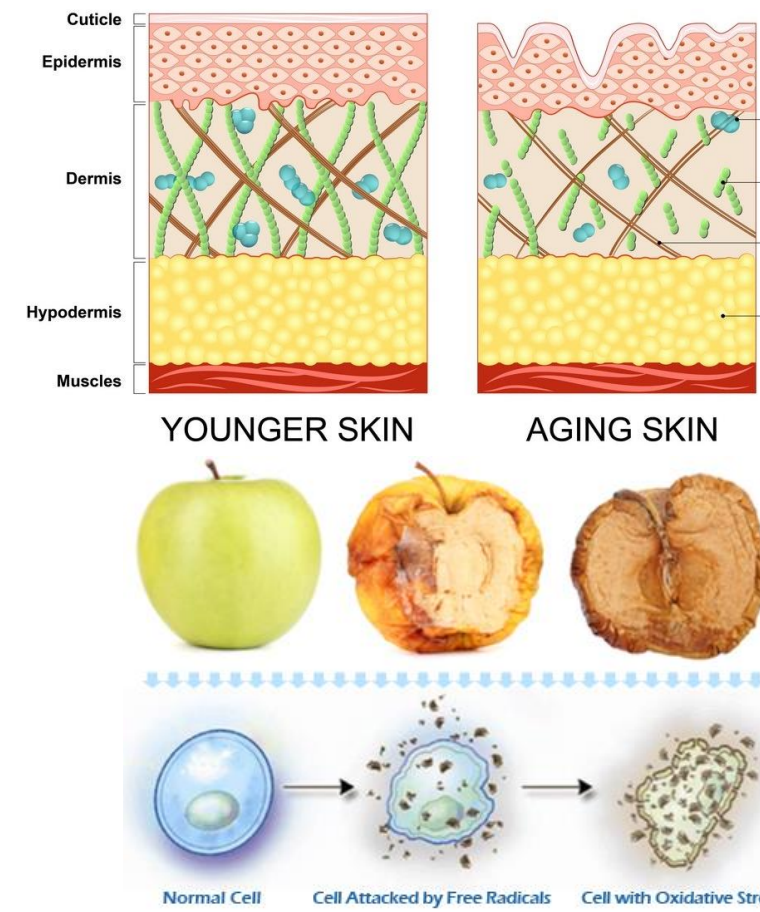
- Genetics
- Environmental exposure – UV radiation, xenobiotics, and mechanical stress
- Hormonal changes
- Metabolic processes – Generation of reactive chemical compounds such as activated oxygen species, sugars and aldehydes

One of the most relevant effects of ageing is the degradation of an important support system called the dermal Extracellular Matrix (ECM), leading to undesired skin alterations. This matrix consists of structural proteins (collagen and elastin), glycosaminoglycans (GAG's), and proteoglycans. [3,4]



Collagen is responsible for conferring strength and support to human skin. Over time, the structural proteins and main components of the skin deteriorate, resulting in the cutaneous signs of ageing.

Elastin is the protein in connective tissue that is elastic and allows tissue to resume its shape after stretching or contracting. Younger skin has a high level of elastin to provide elastic and smooth skin.



Oxidative stress is the underlying cause of cell damage that results from the generation of free radicals. Free radicals are attracted to lipids in the intercellular membrane, DNA, collagen, elastin and other proteins.

Free radicals are generated during normal metabolism but are usually of little harm because of intracellular mechanisms that reduce their damaging effects. However, increased or prolonged free radical action, caused by external ageing factors can overwhelm the skin's normal defence mechanisms.[3]

L-Ascorbic acid is a powerful anti-oxidant that slows the rate of free-radical damage. It is one of the essential vitamins and a powerful anti-oxidant for the skin which would support healthy, youthful-looking skin. It is essential for capillary strength and skin healing processes. It is also key to the production of collagen, a protein aids in skin firmness and strength. Vitamin C assist with ceramide production and therefore enhance the epidermal barrier function. [5-9]

However, the rapid degradation of ascorbic acid in aqueous media is a major factor in the formulation of its products.

Materials & Methods:

L-Ascorbic Acid Stability

Degradation of ascorbic acid in a water/ethanol/dimethyl isosorbide serum was evaluated over a period of 12 month at 25 °C using UV-Vis spectrometry.

L-Ascorbic Acid Delivery

To evaluate the efficacy of the facial serum contains L-ascorbic acid and essential peptides (palmitoyl hexapeptide-12, palmitoyl tripeptide-1, palmitoyl tetrapeptide-7 and caprooyl tetrapeptide-3) , 14 panellists (40-65 years old) have commenced the trial and applied the product once a day in the morning under a moisturiser SPF30+ over a period of 3 months. To evaluate the long-term efficacy of the product another panel test were conducted with 6 panellists (40-65 years old) over a period of 5 months as described. Before and After pictures were captured by the Visia Skin Analysis.

Skin's Firmness

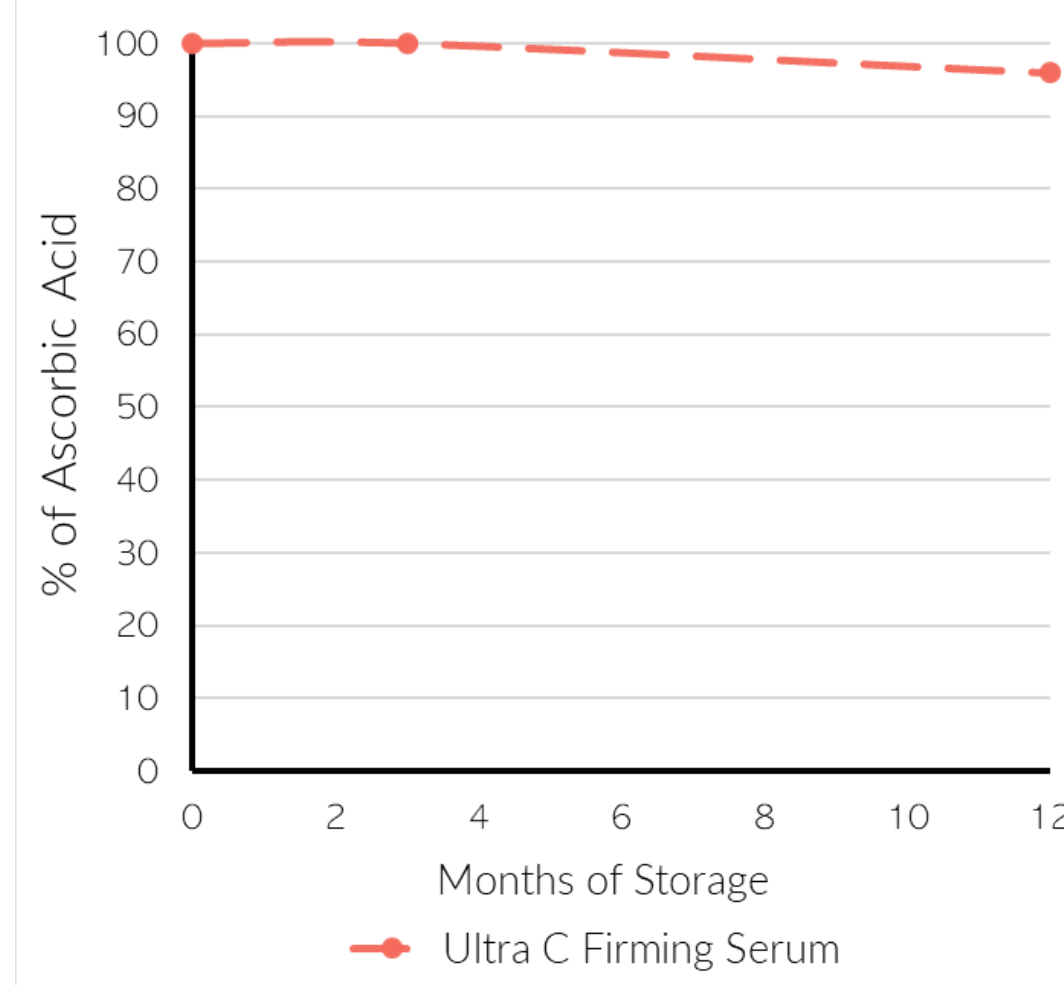
The evaluation of the skin's firmness has been done by Cutometer on 20 panellists, between 45 and 65 years old, with less firm looking skin on the face. The measurements conducted after 28 and 56 days of once-daily use of the facial vitamin C serum.



Results & Discussion:

L-Ascorbic Acid Stability

Ultraceuticals advanced technology has manipulated the aqueous environment to markedly slow oxidation of the L-ascorbic acid, providing a stable storage and delivery environment for the vitamin C.



- Enhanced stability by utilizing the Ultra Technology - the vitamin C has been known to be unstable and easily oxidise over time.

- With our unique formulation we have been able to stabilise the vitamin C to a high level which has been shown in this diagram.

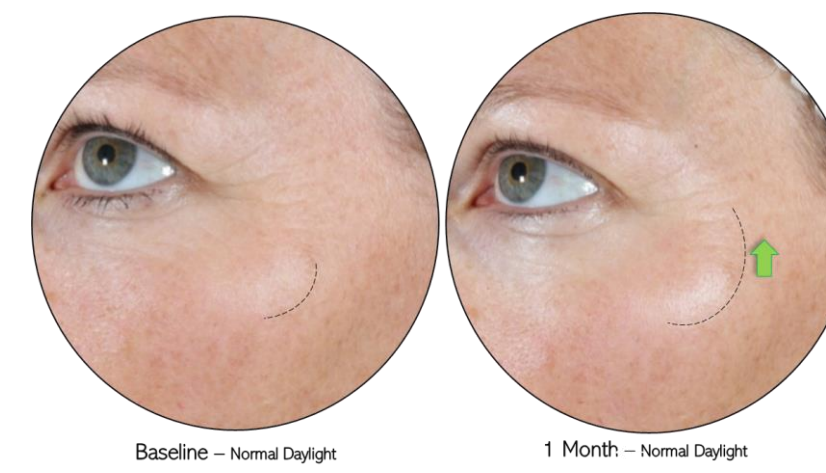
- We have been using a proprietary vitamin C delivery system of this formula which is combining the low pH in a water, polyol/ ethanol, dimethyl isosorbide vehicle.

Clinical Study

- Both based on panellists evaluations of the product and objective image analysis, the aqueous vitamin C serum resulted in notable to good overall effectiveness and overall skin feel in 100% of panellists.
- In terms of skin firmness, wrinkles and fine lines, skin clarity and skin texture, and skin brightening, the product scored notable to good improvements in 100% of panellists.
- On average, the panellists experienced 9% improvement in the look of firmness on D28 and 15% on D56.
- Firmer looking skin was observed in 95% of subjects on D28 and D56.

95% of subjects observed average 9% improvement in the look of firmness on D28

95% of subjects observed average 15% improvement in the look of firmness on D28



Short term panel test summary

- ✓ Notable improvements in skin's clarity and tone
- ✓ Skin appears more firm
- ✓ Fine lines on the forehead area appear diminished
- ✓ Fine lines under eye are less noticeable

Long term panel test summary

- ✓ Notable improvements in skin's clarity and tone
- ✓ Skin appears more firm
- ✓ Fine lines under eye are less noticeable



Conclusions:

- Our advanced technology has manipulated the aqueous environment with a unique combination of water, ethanol and dimethyl isosorbide to markedly slow oxidation of the ascorbic acid, providing a stable storage and delivery environment.
- The product left the skin to feel firmer and more elastic.
- The product reduced the appearance of fine lines and wrinkles and left the skin to feel plump.
- The product improved skin's texture leaving the skin to feel smoother.

References:

1. B.A. Gilchrist, "A review of skin aging and its medical therapy", *Br. J. Dermatol.*, 1996, vol. 135(6), pp. 867-875.
2. L. Rittié, G. Fisher, "UV-light-induced signal cascades and skin ageing", *Ageing Res. Rev.*, 2002, vol. 1, pp. 705-720.
3. L. Baumann, "Skin ageing and its treatment", *J. Pathol.*, 2007, vol. 211, pp. 241-251.
4. N.A. Fenske, C.W. Lober, "Structural and functional changes of normal aging skin", *J. Am. Acad. Dermatol.*, 1986, vol.15(4, pt1), pp. 571-585.
5. H.E. Sauberlich, "Pharmacology of vitamin C", *Annu Rev Nutr.*, 1994, vol.14, pp. 371-391.
6. Y. Shindo, E. Witt, D. Han, et. al., "Enzymic and non-enzymic antioxidants in epidermis and dermis of human skin", *J. Invest. Dermatol.*, 1994, vol. 102, pp. 122-124.
7. D.E. Cabelli, B.H. Bielski, "Kinetics and mechanism for the oxidation of ascorbic acid/ascorbate by HO₂/O₂- radicals. A pulse radiolysis and stopped-flow photolysis study", *J. Phys. Chem.*, 1983, vol. 87, pp. 1809-1812.
8. G.L. Squadrito, X. Jin, W.A. Pryor, "Stopped-flow kinetic study of the reaction of ascorbic acid with peroxynitrite", *Arch. Biochem. Biophys.*, 1995, vol. 322, pp. 53-59.
9. S.R. Pinnell, H. Yang, M. Omar, "Topical L-Ascorbic Acid: Percutaneous Absorption Studies", *Dermatol. Surg.*, 2001, vol. 27(2), pp. 137-142.