Hydrogen Water for Anti-Wrinkle and Smoother Skin Goals

Description

The dermis, which is the layer of skin beneath the outermost epidermis, is composed mainly of type-1 collagen. The skin damage associated with ageing is partly caused by oxidative stress leading to a decrease in collagen levels in the dermis. This contributes towards signs of ageing such as wrinkle formation, changes in the texture of the skin, loss of firmness and impeded healing.

It is well known that sun exposure is a major factor in oxidative stress and skin ageing. This is partly because UVA rays from the sun cause the production of the collagen-destroying enzyme collagenase, therefore contributing towards damage to the skin. Antioxidant supplementation, when done correctly, is one effective method of minimising sun damage to the skin. This can include use of substances that are similar to the antioxidant vitamin A, known as retinoids. These encourage collagen production, while inhibiting collagenase production.

Molecular hydrogen is a powerful antioxidant. Consequently, a scientific study was carried out in order to analyse the protective effect of hydrogen-rich water (HW) against skin damage from UVA rays. This was done by measuring to what extent HW promoted collagen production and discouraged keratin destruction in comparison to regular water (RW). A clinical assessment was also carried out in order to ascertain whether or not daily bathing in hydrogen water can repress the formation of wrinkles.

For 3-5 days fibroblasts (collagen-producing cells) were treated with either HW or RW and exposed to 1.2 Joules/cm^2 UVA two times a day. When the layers of fibroblasts were exposed to UVA, collagenase was produced, contributing to skin damage by radiation. However, the effects were ameliorated to some extent by both the use of regular water and of hydrogen-rich water. Sooner and much more abundant synthesis of type-1 collagen occurred in the case of HW application than did when RW was used. When hydrogen water was administered before UVA exposure, the viability of keratinocytes (keratin-producing cells) was maintained to a significant extent, while RW had little protective effect. Apoptosis (cell death) was also reduced by HW and characteristics of apoptosis such as nucleus abnormality were also suppressed, more so than with administration of regular water. These results indicate that hydrogen water can significantly lessen the oxidative stress, DNA damage and cell death triggered by UVA exposure, surpassing the extent to which regular water can do so. This protection against UVA-induced damage seems to be as a result of the dissolved molecular hydrogen preventing the generation of molecules that cause oxidative stress, reactive oxygen species (ROS).

For 3 months, 1 male and 5 female participants between the age of 14 and 65 bathed daily in hydrogen-rich water. After this time, 4 out of 6 subjects had significantly improved wrinkles on the back of their necks, while the other two individuals did not see significant results. Regular use of hydrogen water was therefore shown to help reduce oxidative stress in the skin and prevent wrinkle formation, without causing any side-effects. This is likely because the antioxidant effect of the HW was able to counteract the damage that would otherwise be caused by increased ROS levels after radiation

exposure.

It can be concluded that the antioxidant properties of molecular hydrogen can help to prevent skin ageing and damage from exposure to UVA rays. Hydrogen water was shown to promote type-1 collagen synthesis and decrease destruction of keratin cells, as well as helping to reduce wrinkle formation. These benefits can be achieved without side effects, therefore, using hydrogen water has the potential to be a safe and effective measure in anti-ageing skin care.

Category

1. Articles

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