Effects of Korean Red Ginseng as an Environmental Skin Barrier Function

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Received 2 May 2014 / Received in revised form 21 October 2014
Accepted 4 November 2014
DOI 10.1007/s13530-014-0213-x
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Abstract

Dry skin dermatitis is a common skin disease, associated with aging and environmental changes. Damaged skin from xerosis can be evaluated with several objective methods such as D-squame, transepidermal water loss (TEWL), corneometer, and a pH meter. Forty-two patients with xerosis participated in this study. We assessed the effects of Korean red ginseng after 6 weeks of taking the medicine. Patients who treated with Korean red ginseng were clinically improved but the results were measured by D-squame, TEWL, corneometer, and a pH meter did not show statistical significant. These data indicate that Korean red ginseng may be a useful health supplement. However, further study that include more large patients’ group would be required.

Key words: Korea red ginseng, Skin barrier function

Introduction

Human skin acts as a protective barrier against various environmental factors. A damaged skin barrier increases the prevalence of some skin diseases, including atopic dermatitis and xerosis¹. Studies have revealed that atopic dermatitis is directly connected to genetic and environmental factors. Xerosis or dry skin dermatitis is a common condition characterized by pruritus accompanied with erythema, desquamation, and eczema². Many studies have attempted to reveal the exact etiology, but it is still not completely understood. There are a variety of genetic, intrinsic, and environmental factors related to xerosis³. Before environmental factors were implicated in xerosis, the skin disease was mainly thought to be caused by the decreased water content and sebum production in the elderly. Xerosis results in keratinization abnormalities, destruction of corneocyte junctions, and a loss of skin barrier function³⁴. Additionally, xerosis induces an increase in the number of mast cells and histamine content in the dermis⁵.

Global warming is becoming a serious environmental problem, resulting in several environmental changes, such as decreased precipitation and humidity. It could be possible causative of increased prevalence of xerosis. Exposure to low humidity has been shown to reduce water levels in the stratum corneum⁶, and xerosis has increased gradually in prevalence as a result.

Korean red ginseng is well known to be an effective remedy for atopic dermatitis and alopecia areata ⁷⁻⁸. However, there are presently no reports are available regarding the efficacy of Korean red ginseng for treating xerosis. We evaluated the efficacy of Korean red ginseng as a xerosis treatment in this case-control study.

Results

D-Squame

The scaling index tended to decrease gradually after the patients were treated with Korean red ginseng for three and six weeks (p > 0.05) (Figure 1).

Evaporimeter

The TEWL measurement value was 30.26 g/m² h in the treatment group and 30.28 g/m² h in the control group. At the three week follow up, the Korean red ginseng medication group tended to have a lower TEWL value than that of the control group (29.01 g/m² h and 30.24 g/m² h, respectively) (p > 0.05) (Figure 2).

Corneometer

The initial corneometer values were 49.0 in the control group and 52.4 in Korean red ginseng medication group. Skin surface moisture tended to increase after...
six weeks in both groups ($p > 0.05$) (Figure 3).

**pH**

Skin pH was not different before and after treatment ($p > 0.05$) (Figure 4).

**Discussion**

This study aimed to test the efficacy of Korean red ginseng as a treatment for xerosis. Medical engineering methods to measure skin conditions revealed a slight improvement in xerosis in the Korean red ginseng medication group after 3 and 6 weeks.

Smoke- and soot-emitting facilities were constructed worldwide after the Industrial Revolution began in the eighteenth century. As a result, smoke from factories caused severe air pollution including carbon dioxide, methane, and nitrogen oxide. This industrialization has caused global warming, and more people are suffering from xerosis today due to these climatic changes.

Xerosis is a common disease in the elderly, and its complex physiopathology is only partially understood. Physiological, hormonal, and cutaneous aging, as well as the use of detergents all contribute to a loss of cutaneous lipids in the stratum corneum. Several dermatologic diseases, including atopic dermatitis, psoriasis, and ichthyosis also cause xerosis. Especially, atopic dermatitis characterized itching and dry skin showed a damaged skin barrier function. The most common therapy for xerosis is a topical corticosteroid, used to downgrade skin inflammation. Further xerosis is prevented using cleansers or emollients.

Many researchers have attempted to identify the therapeutic effects of Korean red ginseng on various dermatologic diseases. Previous studies have shown its positive effects in alopeia areata, atopic dermatitis, and UVB irradiation-induced skin lesions. The antioxidant, anti-inflammatory, and anti-allergic effects of Korean red ginseng have been frequently reported. Ginsenosides are the important active ingredients in Korean red ginseng. The anti-inflammatory effects of the ginsenoside Rh1 and the anti-allergic effects of ginsenoside Rh2 have been identified. The effect of Korean red ginseng has been determined to be similar to the anti-inflammatory effects of low dose glu-