

The Effect on Skin Properties by Continuous Use of Hydrogen Inhalation

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BACKGROUND

In recent years, the occurrence of poor health and insomnia due to excessive stress has become a concern. It is also well known that women in particular are highly aware that stress is the cause of their skin problems.

On the other hand, evidence has recently shown that hydrogen gas inhalation can reduce stress perception and physiologically increases parasympathetic nerve activity.

Therefore, in this study we investigated the anti-stress and skin condition effects of continuous use of hydrogen inhalation on adult women who are highly stressed and prone to skin problems.

METHOD

Healthy adult females in their 20s to 30s living in and around Tokyo were selected as subjects. Hydrogen (8 cc/min) from a small hydrogen generating apparatus (product name: Kencos 3, made by AquaBank) was applied five times a day for two weeks.

A crossover test was conducted to compare and verify the results.

Description of experiment: Effects on skin properties of continuous use of hydrogen inhalation for 2 weeks.

The index of firmness and sagging was measured by viscoelasticity using a Cutometer. The index of moisture retention was measured by electrical resistance using Squeakon, and the index of dullness was measured by VISIA image analysis of the face.

In addition, the stress awareness of the participants during the study period was measured

using a stress checklist (30 items).

The stress checklist (SCL30) and the Multidimensional Emotion Scale questionnaire were used to analyze stress awareness and mood changes during the study period.

The study was conducted under the approval of the Ethical Review Committee of the Chiyoda Paramedical Care Clinic, the clinical study institution, with the explanation and consent of the subjects.

Statistical analysis: The p-value was calculated as the probability that there was a statistically significant difference in the mean difference of each group, and the effect size was calculated as an index of the size of the difference in the mean difference.

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RESULTS

The average difference of SCL30 during the unused period was +0.10.

In the period of continuous hydrogen use, the mean difference was -2.20.

A significant ($p=0.033$, $p<.05$) decrease in stress scores was observed.

The effect size was 0.05. In addition, the effect size was 0.68, indicating a moderate effect.

Analysis using the Multidimensional Affective Scale showed that, of the eight items, "Depression/Anxiety" was the least effective.

Among the eight items, the mean difference of "depression/anxiety" was -0.30 in the unused period.

In the period of continuous hydrogen use, the mean difference was -1.80, a significant difference ($p=0.036$).

($p=0.036$, $p<.05$) A significant decrease in depression and anxiety was observed.

The effect size was 0.70, indicating a moderate effect. Furthermore, "hostility"

In addition, "hostility" decreased from -1.0 in the unused period to -1.7 in the period of continuous hydrogen use.

A significant ($p=0.032$, $p<.05$) decrease was observed. The effect size was 0.72, indicating a moderate effect.

In the skin viscoelasticity measurement, the instantaneous skin reversion rate R7 value was decreased in the unused period.

In the measurement of skin viscoelasticity, the mean difference value of the instantaneous skin return rate R7 value was -0.01 during the unused period, while it was 0.01 during the hydrogen continuous use period.

The p-value was 0.028, statistically significant, and the effect size was 0.74, indicating a

moderate effect.

In addition, the mean difference in the R2 value of skin return rate was -0.02 in the unused period.

The p-value was 0.076, which was not statistically significant, but the effect size was 0.59, which was moderate.

Other skin effects will be presented at the meeting.

THOUGHTS

The above results confirm the psychological effects of continuous hydrogen inhalation.

Negative emotions such as depression and hostility decreased.

As for the psychological effects of the drug, daily feelings of stress decreased significantly and negative emotions such as depression and hostility decreased, suggesting anti-stress and anti-depressant effects.

In terms of the effects on skin properties, there was an improvement in firmness and sagging, suggesting the skin beautifying effects of continuous hydrogen use.

In the future, we would like to consider the use of hydrogen in the beauty field as well as in the health care field.

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