

The Study of glutathione compound as a skin whitening agent in cosmetics

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Abstract

Agglutination is used as a strong antioxidant in skin care products and health as bleaching for the skin with the product Topical *oxidized agglutination* (2 %) (GSSG) in women, A study has been conducted for the purpose of assessing the effectiveness and safety of agglutination in cosmetics. (78) Iraqi women with an average age (of 34.3 ± 6.8) years in A random clinical study in Baghdad, Women's experiments They were distributed into (3) groups according to the subjects tested, which are (0.1% GSH for 28 women), (0.5% GSH for 26 women) and (18 women without GSH) tried Each group tried the product twice daily on their face in combination with a day cream, a sunscreen, and a moisturizing night cream for two months.

Exponential increases in luminance were detected from the second week where it was higher (0.5% GSH group) compared to (0.1% GSH group) and (0-GSH group) . Hyper-pigmentation lesions also improved, as they showed discomfort for a few minutes and there was a slight tingling sensation after the night cream application test. As a result, skin care products containing GSH (0.5%) are more effective in lightening the face. skin from concentrate (0.1%GSH)

keyword: - Agglutination, GSSG.epidermis-lightening, healthy interest

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-1- Introduction

Glutathione is an antioxidant made by the body through the liver and nerve cells, consisting of 3 amino acids, namely (Cysteine), (Glycine), and (Glutamate), and has therapeutic uses in cases of nerve damage caused by the toxicity of chemotherapy treatment. (1,2)

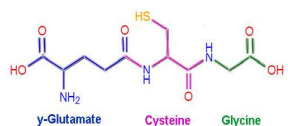


Figure (1) Agglutination formula [C₁₀H₁₇N₃O₆S]

it can also be obtained from food, dairy products, cereals, and bread contain a small percentage of glutathione, while vegetables, and fruits contain an average percentage, and fresh meat it contains a high percentage of it, in addition to its presence also in many dietary supplements. (2)

1-2-The benefits of Glutathione

It is necessary to maintain optimal glutathione levels in the body, due to its antioxidant effects, as its deficiency leads to many problems, such as some diseases, Alzheimer's, Parkinson's, liver, cistic fibrosis, cardiac attack, stroke, and diabetes. (2,3)

Many skin care products containing glutathione are marketed, due to its effects in whitening and toning the

skin, these include soaps and creams, as well as dietary supplements. (4)

Agglutination subscribes to the construction and repair of vital tissues, where it is worth noting the ability of glutathione to stimulate the immune system, helping it in the treatment and Prevention of a wide range of health conditions, including alcoholism, cataracts, high intramuscular pressure, colitis, high cholesterol, osteoporosis, it is also inhaled to treat lung diseases, such as pulmonary fibrosis, lung disease in people with HIV. (4,5)

The effect of agglutination has been observed in the process of melanin synthesis, as it has been shown to inhibit the synthesis of melanin, which may contribute to whitening skin color and reducing pigmentation. Pharmaceutical forms of agglutination for bleaching. (7)

1-3-Glutathione exists in several forms, which include the following: -

A. Topical preparations containing glutathione for bleaching

A study conducted in 2016 indicated that the effectiveness of topical agglutination in whitening has not been proven with certainty, despite its effect on melanin levels. Agglutination is present in cosmetic topical preparations such as face washes and creams.

It is worth mentioning that agglutination can contribute to increasing skin hydration, also smoothness, and reducing the appearance of wrinkles.

B. Agglutination pills for bleaching

Studies on the role of agglutination pills for bleaching are still weak and insufficient, as it turns out that the absorption of glutathione pills and capsules is low in

the intestine so that a sufficient amount does not reach the blood, limiting its effectiveness. (8)

However, some pharmaceutical forms of glutathione, such as its presence in the form of pills dissolved in the mouth, placed under the tongue, or in the cheek, may contribute to improving absorption and effectiveness, however, more research and clinical studies. (9)

2-1- Injections of glutathione for bleaching

Recently, so-called whitening, injections containing glutathione have appeared, and although it is believed that injections overcome the absorption problem in which pills are affected, studies on the effectiveness of the injections and their safety are not enough yet, in addition to their high price, and side effects that may be dangerous for some. also, Doctors prescribe glutathione intramuscularly to prevent the toxic side effects of chemotherapy, which is used in people with cancer, and it is also prescribed for the treatment of male infertility. (10,11)

2-2-The effectiveness of glutathione for skin whitening

So, as we have shown, the effectiveness of glutathione for whitening is not really confirmed yet. A 2020 study indicated that its effectiveness may appear in some areas of the body only and that it has not yet provided promising results for long-term whitening.(11,12)

2-3-The harm of glutathione for bleaching

In fact, there is not enough information available about the degree of safety of using topical creams or taking glutathione pills, but in general, its use in listed ways is often safe and limited to the appearance of rashes in some. (13)

3-Fitzpatrick skin types

Skin types, indeed - oily or dry, combination or sensitive,when it comes to skin tone,looking at skin type through different factors its ability Skin tanning, burning. As for glutathione injections for bleaching, their side effects are one of the limitations of their use, as they may pose a danger to some people, there are a number of side effects of glutathione, like Dietary supplements that contain glutathione can cause many side effects such as bloating and stomach cramps, in addition to the appearance of some allergic symptoms in some people, such as skin allergies, ranging from skin rashes to life-threatening (Stevens-Johnson syndrome). (14)

The occurrence of bronchospasm when used to treat pulmonary diseases in the case of patients with asthma, should be avoided during pregnancy or lactation due to the lack of sufficient evidence of its safety. (14,15)

Cases of severe abdominal pain have been reported in people who used the injection twice a week. Kidney problems may also increase the risk of kidney failure. Other life-threatening problems include liver damage, vascular embolism that blocks blood vessels, and sepsis, which may result from problems with injection

sterilization. In addition to a gland disorder, which represents thyroid problems.

(16)

4-1- Alternatives to glutathione for bleaching (17,18)

Before touching on the mention of glutathione substitutes, it is necessary to note the need to consult a dermatologist before using any of them, to determine the appropriate dosage, follow up the case, and the extent of response to treatment, glutathione substitutes include the following:

A.Topical hydroquinone.

B.Topical hydrocortisone.

C.The laser.

4-2- Glutathione to improve cardiovascular health

The use of nutritional supplements that contain glutathione, in addition to paying attention to daily exercises, assists in improving blood flow in blood vessels and the heart. (18)

Materials and methods

The number of registered female volunteers (78 women).(6)Healthy women were excluded from the study according to the Fitzpatrick model, because of using skin-lightening and anti-aging products a month ago, as well as breastfeeding, pregnancy, some hormones, nutritional supplements, or different medications. All participants used a day cream, night cream, and face wash, with study instructions for regulation.The participants were divided (to 3categories) depending on the concentration of GSH added to skincare products, which were (0.1%, 0.5%) and the latest without GSH.(19)

The cream used contains mixture of Octocrylene, Butyl methoxy dibenzoylmethane , diethyl hexyloxy,phenol methoxy phenyl triazne, dioxide with SPF. (20)

Basic physical and vital changes were assessed every (2 to 8 weeks) , with asafy performed by a specialist consultant dermatologist and record the readings of the used device every two weeks.(20,21).



Figure (2) Chroma meter Minolta CR (200)

Pre-approval was obtained before the topics were included, and the study was conducted according to the Helsinki Declaration. Ethical clearance was obtained before women volunteered for the experiment.

Results and Discussion

Since the second week, the results indicated when change in skin color in women who used cream concentrated of (0.5 GSH) glutathione added to the mixture used, a rise appeared percentage of whitening skin according to the concentrations used and the duration of the experiments.

After completing two months of purposeful work, the qualitative study showed the benefit of adding glutathione at a concentration of (0.5) as a cosmetic user that does not pose a threat to women's skin and does not leave an undesirable effect when used and gave clear results. in lightening skin color. The probability of a (0.5 GSH) concentration is estimated to be ($P < 0.05$).

While the probability of (0.1 GSH) concentration was ($P < 0.05$).

The percentage of whitening during two weeks was negligible for the glutathione-free group (1.4%) and increased to (3.7%) for the (0.1% GSH group) and (12.7% for the 0.5% GSH group), Figure (3).

The percentage of bleaching was measured after two months of the experiment, and it was (2.8%) for the free group, (1.3% for the 0.1% GSH) concentration) and (28.8%) for the (0.1% GSH) concentration) group, Figure (4).

Figure (5) shows the difference between increasing the percentage of whitening after treatment from the second week to the eighth week using skin care products free of glutathione and between different concentrations added to the ingredients free of glutathione

No hyperpigmented lesions at the end of the trial, but skin tone gradually whitened to its highest extent within two months of use for all trial groups.



Figure (3) Increasing ratio bleaching after 2 weeks of

treatment with skin care products containing GSH combinations



Figure (4). increasing ratio bleaching after treatment 2 months with skin care products containing GSH combinations



Figure (5) The difference between the increase in the percentage of whitening after treatment from the second week to the eighth week using skin care products that contain GSH formulations

Conclusions and recommendations

Glutathione can help in the treatment of anemia cases, by being it intravenously to patients with kidney disease and undergoing hemodialysis, in addition to its importance in improving blood flow and reducing its clotting in people suffering from atherosclerosis

Healthy recommendations First: internal care...

- 1- Fatty acids
- 2- Vitamin C
- 3- Vitamin E
- 4- Zinc
- 5- Water

Second: external care.

- 1- The brush
- 2- Coconut oil
- 3- Olive oil

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