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Carcinine Supplementation Increase Dermal Density in Insulin Resistence Menopause Women

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Abstract

Insulin resistance is a metabolic disorder in which target cells fail to respond to normal levels of circulating insulin. In the skin, insulin resistance is associated with premature aging and collagen loss, mainly by altering its structures through glycation. It is known that the use of nutraceuticals reduces the rate of glycation in the skin, which can reduce the rate of aging. The oral use of carcinine has demonstrated positive effects on glycation. The objective of the study was to evaluate the effect of carcinine on the dermal density of the skin. Six menopausal women, with insulin resistance took 300 mg of carcinine orally and underwent two radiofrequency sessions with an interval of 15 days. The study lasted 30 days. To assess dermal density, all women underwent facial ultrasound, in which the chin and malar region were measured. An increase in dermal density was observed in all women evaluated. The average increase in dermal density was 8.6% in 30 days. We concluded that oral carcinine supplementation increased dermal density in menopausal women with insulin resistance.

Keywords: Insulin; Carcinine; Menopausal; Dermal Density; Nutraceutical Supplementation.

Introduction

Insulin resistance is a physiological state where the body's cells have a reduced response to the action of insulin. This metabolic disorder is often associated with the development of conditions such as type 2 diabetes, obesity, metabolic syndrome and cardiovascular disease [1, 2].

Insulin resistance significantly affects the skin, compromising both its health and appearance. This condition can increase the chronic inflammatory state [3]. Furthermore, insulin resistance impairs the production of collagen, essential for the integrity and elasticity of the skin, resulting in more fragile skin with less elasticity, which contributes to premature aging and the formation of wrinkles [4].

As Insulin resistance, glycation have significant impacts on skin health, directly affecting collagen production and accelerating skin aging [4, 5]. In insulin resistance, the body does not efficiently utilize insulin, leading to high blood glucose levels which, in turn, reduce collagen synthesis and increase its breakdown. The glycation process occurs when glucose increase and reacts with proteins such as collagen, forming advanced glycation end products (AGEs) that make collagen fibers rigid and less elastic. This contributes to wrinkles, tightness and loss of elasticity, as well as promoting oxidative stress and inflammatory processes that accelerate skin aging [5, 6].

Some nutritional strategies can be used to minimize the effect of insulin resistence and glycation on the body and skin. It is already known that carcinine improves the biochemical parameters associated with AGEs. Therefore, it is believed that carcinine supplementation can improve the damage associated with insulin resistance and glycation on the skin [7-9].

Case Report

In this case report, six menopausal women, with insulin resistance, aged between 44 and 59 years (±50.2 years) took 300 mg of carcinine orally and underwent two radiofrequency sessions with an interval of 15 days. To assess dermal density, all women underwent facial ultrasound, in which the chin and malar region were measured (Figure 1). The density value was measured by the average density of the regions compared at the beginning (T0) and end of treatment (T1). The study lasted 30 days. After 30 days of intervention, he recommended an increase in dermal density in all women.

Figure 1: Facial ultrasound in which the chin and malar region were measured.

The results of the present study are expressed in table 1. Thus, in the malar region there was a 10% increase in dermal density. In the mental region there was an increase of 7.1%. The overall increase in dermal density, that is, the average of all measurements was 8.6%.

Chin			Malar		
Subject	T0 (mm)	T1 (mm)	Subject	T0 (mm)	T1 (mm)
1	1,48	1,6	1	0,91	0,98
2	1,41	1,49	2	0,83	0,96
3	1,38	1,43	3	1,01	1,03
4	1,37	1,47	4	0,8	0,93
5	1,63	1,75	5	1,08	1,15
6	1,32	1,46	6	0,83	0,96
Median	1,43	1,53	Median	0,91	1,00

Table 1: Result of the intervention after 30 days.

Discussion

Insulin resistance, identified as an impaired biological response to insulin stimulation in target tissues. The metabolic consequences of insulin resistance can result in hyperglycemia, hypertension, dyslipidemia, hyperuricemia, elevated inflammatory markers, and endothelial dysfunction [10]. During menopause, according to some studies, the decline in estrogen increases the chances of developing insulin resistance and its associated diseases [11] The skin is one of the tissues damaged by insulin resistance and type II diabetes. With an increase in blood glucose, skin structures, such as collagen and elastin, tend to suffer from the gligation process, oxidative stress and inflammation. Studies show that, with changes in glucose metabolism, there is an increase in the activity of matrix metalloproteinases, enzymes that degrade skin collagen, as well as a reduction in the rate of collagen synthesis in the tissue. Thus, insulin resistance is one of the factors associated with atrophy and the skin aging process [12].

Nutrition is understood as a determining factor in the treatment of insulin resistance. Dietary glycemic control reduces blood glucose and insulin levels in plasma [13]. Nutraceutical supplementation, in turn, helps in the nutritional treatment of insulin resistance [7, 8]. The use of carcinine has been widely studied as a resource that helps with glycemic and insulinemic control in individuals with insulin resistance and type II diabetes [8]. Another important aspect associated with carcinine is its potential antioxidant and anti-glycating effects [13]. It is already known that glycation interferes with the structure of the skin, mainly altering the function of collagen in the tissue [14]. In the present study we were able to observe that carcinine supplementation (300mg) was able to improve tissue density parameters. The result of the present study is believed to be associated with the anti-glycating role of carcinin in the skin. Studies using carnosine, an analogue of carcinine, show that its supplementation is capable of improving hydration parameters, as well as reducing skin roughness [15, 16]. Through ultrasound analysis, an increase in dermal density was observed in menopausal women and those with insulin resistance, showing that carcinane is an excellent strategy for reducing the effects of glucotoxicity on the skin.

Conclusion

In the present study, it was demonstrated that carcinine supplementation in menopausal women with insulin resistance was able to increase dermal density.

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