



## Case Report

# Evaluation of the Efficacy of Fractionated Radiofrequency Associated with Topical and Oral Silicon in Increasing Dermal Density in Menopausal Women

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### Abstract

Skin aging is a process associated with the loss of collagen. Currently, it is known that the use of technologies, cosmetics and nutraceutical supplements make up the arsenal to reduce this process. The present study aimed to evaluate the effect of topical (5% methylsilanol mannuronate on the face) and oral (200mg of organic silicon stabilized in marine collagen) use associated with fractional radiofrequency or not on improving the dermal structure of the skin. For the study, 12 menopausal women, aged between 57 and 67 years, were recruited and divided into six groups: group 1 - oral use without radiofrequency; group 2 - topical use without radiofrequency; group 3 - oral and topical use without radiofrequency; group 4 - oral use with radiofrequency; group 5 - topical use with radiofrequency; group 6 - topical use with radiofrequency. To analyze dermal thickness, the mental region of the left and right face were evaluated using ultrasound at the beginning of treatment (T0) and at the end (T1). The interventions lasted 60 days. The results of the present study show an increase in dermal density in all treatments. The best result was observed in group 6 with an increase of 24.4% in the left region and 21.1% in the right region of the face. We conclude that the association of fractional radiofrequency associated with topical and oral silicon increases dermal density in menopausal women.

**Keywords:** Cosmetics; Fractional Radiofrequency; Skin Aging; Menopausal Y; Dermal Density

### Introduction

Skin aging is a process associated with the loss of its structures. Thus, with advancing age there is a reduction in the volume of collagen and other tissue components [1, 2]. In menopause, numerous changes occur, especially the loss of ovarian function, which culminates in a decline in estrogen production. Estrogen has a direct impact on skin, regulating many functions, including collagen synthesis by fibroblasts [2]. Approximately 30% of collagen is lost from the skin after the first five years after menopause [3].

Strategies to reverse this phenomenon have been widely studied and, currently, it is known that the use of technologies, cosmetics and nutraceutical supplements make up the arsenal to reduce this process [4].

Microneedle fractional radiofrequency (MFR) is a novel technology with additional benefit in that it selectively delivers RF through insulated microneedles. Radiofrequency combined with microneedling further enhances skin tightening remodeling by delivering energy through microneedles at a desired predetermined depth [5].

Nutritional strategies can greatly improve the appearance of aged skin. The use of organic silicon, oral and topical, has

proven effective in controlling aging, mainly by elevating collagen synthesis [6].

The present study aimed to evaluate the effect of topical (5% methylsilanol mannuronate on the face) and oral (200mg of organic silicon stabilized in marine collagen) use associated with fractional radiofrequency on improving the dermal structure of the skin.

### Materials and Methods

For the study, 12 menopausal women, aged between 57 and 67 years, were recruited and divided into six groups. Group 1: oral use without radiofrequency; group 2: topical use without radiofrequency; group 3: oral and topical use without radiofrequency; group 4: oral use with radiofrequency; group 5: topical use with radiofrequency; group 6: oral and topical use with radiofrequency. To analyze dermal thickness, the mental region of the left and right face were evaluated using ultrasound at the beginning of treatment (T0) and at the end (T1). The interventions lasted 60 days.

### Results

The results of the present study show an increase in dermal density in all treatments. In group 1 there was an increase of 9.5% in the left region and 10% in the right region; in group 2 there was an increase of 4.5% in the left region and 5.2% in the right region; in group 3 there was an increase of 16.6% in the left region and 17.6% in the right region. In group 4 there was an increase of 14.7% in the left region and 15.6% in the right region; group 5 there was an increase of 17.7% in the left region and 16.2% in the right region; in group 6 there was an increase of 24.4% in the left region and 21.1% in the right region. As expected, oral, topical and oral and topical intervention was better in the radiofrequency group. The results of the study are summarized in table 1.

Group	Left	Right
Group 1	Increase 9.5%	Increase of 10%
Group 2	Increase 4.5%	Increase 5.2%
Group 3	Increase 16.6%	Increase 17.6%
Group 4	Increase 14,7%	Increase 15.6%
Group 5	Increase 17,7%	Increase 16,2%
Group 6	Increase 24,4%	Increase 21,1%

**Table 1:** Increase in dermal thickness in different treatments.

### Discussion

Menopause is associated with deep changes in the skin structures, mainly in amount of collagen. This phase is characterized by a reduction in the dermic thickness, which contributes to the formation of wrinkles and flaccidity [8, 9, 10]. Many of the

alterations are attributed to the hormonal changes [1, 10, 11, 12]. Strategies to reverse aging in this period are applied and in this context, the use of nutraceuticals and aesthetic procedures have been widely employed [4]. The oral and topical use of organic silicon and fractionated radiofrequency has been described as an effective strategy to reduce the aging marks on the skin. In the present study, the use of oral and topical organic silicon increased dermal thickness, however, when associated with fractionated radiofrequency, the increase was 1.4 to 3.9 times greater in the groups with fractionated radiofrequency on the left side of the face and 1.1 to 3 times higher in the group with radiofrequency on the right side of the face. A similar result was obtained in a study conducted by Wolpe et al (2023), in which menopausal women subjected to fractional radiofrequency and oral and topical use of organic silicon had a significant increase in dermal thickness [13]. Another study observed the association between oral and topical use of organic silicon with an expressive increase of more than 20% in skin thickness in the mental region of the face [13]. Radiofrequency is often used as an anti-aging aesthetic therapy. This technique uses minimally invasive micro-needles or electrode pins to target the dermal region. A study conducted by COOK et al. revealed that menopausal women after four months of treatment showed an improvement in texture, as well as a reduction in expression lines of the facial skin [8]. In the present study, it was evident that the association of fractional radiofrequency with the oral and topical use of organic silicon showed the best result on the increase of dermal thickness, showing the importance of the topical and oral association to the aesthetic procedures [14-15].

### Conclusion

We conclude that the association of fractional radiofrequency associated with topical and oral silicon increases dermal density in menopausal women.

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