

TOPICAL 0.5% BAKUCHIOL VS FACIAL EXERCISES IN IMPROVING THE SIGNS OF FACIAL AGEING. A RANDOMISED CONTROL TRIAL.

Dermatology

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ABSTRACT

The natural process of aging is characterized by wrinkles, folds, ridges, and pigmentation in the skin that arise from factors such as photo exposure, dehydration, and body mass loss. As people age, their skin becomes thinner, less elastic, wrinkled, unevenly pigmented, and has irregular textures. Both endogenous (gene mutation, cellular metabolism, and hormones) and exogenous (UV, pollution, chemicals, and toxins) factors contribute to the aging process of the skin. The seeds of the Indian plant *Psoralea corylifolia* (Babchi) are the primary source of bakuchiol, a pure meroterpene phenol. It possesses antioxidant, anti-inflammatory, anti-proliferative, and anti-acne properties. It is well known to significantly enhance firmness, pigmentation, and wrinkles. By stimulating underlying muscle growth, which has recently piqued interest in the community, facial exercise can also revitalize the aging face. The goal of this study is to compare the efficacy of bakuchiol to facial exercises in treating common signs of cutaneous aging.

KEYWORDS

bakuchiol, facial exercises, wrinkles

INTRODUCTION

The natural process of aging is characterized by wrinkles, folds, ridges, and pigmentation in the skin that arise from factors such as photo exposure, dehydration, and body mass loss. As people age, their skin becomes thinner, less elastic, wrinkled, unevenly pigmented, and has irregular textures¹. Both endogenous (gene mutation, cellular metabolism, and hormones) and exogenous (UV, pollution, chemicals, and toxins) factors contribute to the aging process of the skin. Every year, the synthesis of collagen and elastin in the skin declines by 1%, causing connective tissue to become disorganized and giving rise to wrinkles. Different anti-aging strategies exist. Botanical products have been the cornerstone of medicine for ages. The seeds of the Indian plant *Psoralea corylifolia* (Babchi) are the primary source of bakuchiol, a pure meroterpene phenol. It possesses antioxidant, anti-inflammatory, anti-proliferative, and anti-acne properties. It is known to significantly enhance firmness, pigmentation, and wrinkles. By stimulating underlying muscle growth, which has recently piqued interest in the community, facial exercise can also revitalize the aging face². This study compares the effectiveness of face workouts with bakuchiol in addressing common cutaneous aging indicators. The objective of this study was to compare the efficacy of topical 0.5% bakuchiol and facial exercises in reversing the cutaneous signs of facial ageing.

All the individuals aged 40-55 years presenting with signs of cutaneous facial ageing such as creases, wrinkles and folds (Forehead Lines, Crow's Lines, Marionette Lines, Glabellar Frown Lines,) to the Department of Dermatology in R L Jalappa Hospital and Research Centre attached to Sri Devaraj Urs Medical College, Tamaka, Kolar were evaluated and randomised into Group A or Group B. Group A patients after a complete cutaneous examination were advised to apply few drops of Topical 0.5% Bakuchiol everyday overnight for fourteen weeks over the wrinkles. Patients of this group were advised to follow-up every month and assessed using Daniil scale. The cost for the required molecule was borne by the principal investigator. Group B patients after a complete physical examination were taught a set of 6 facial exercises [(1) lifting the eyebrows and frowning the forehead, (2) approximating the eye-brows, (3) closing the eyes with strength, (4) protruding the lips, (5) spreading the lips, and (6) contracting the

right and left cheek against resistance] and advised to follow the routine on a daily basis for fourteen weeks. Patients of this group were advised to follow-up every month and assessed using Daniil scale. Patients with congenital disorders or malformation, facial palsy, traumatic scars and who are not giving consent for the participation were excluded.

Based on survey of previous literature for an outcome variable on proportion of clinical grading 59% vs 34% in two different groups the minimum difference of 25% to attain significance at type I error (α error) of at least 5%, Type II error (β error) at 10% and keeping statistical power above 90%, the sample size of 42 (21+21) is adequate for two group assessment clinical study after adjusting for lost-to-follow up, dropout rates and withdrawals. Chi-Square test, Fisher exact test, student t test or any other suitable method at the time of data analysis were used for statistical analysis. SPSS 22.0, R Environment, MedCalc, MS Excel and Word were the softwares used.

RESULTS

In our study 42 participants were enrolled. All the patients enrolled were between the age of 40-55 years in which the mean age of the patients in Group A was 50.476 ± 2.620 and Group B was 51.00 ± 2.324 . Out of the 42 participants enrolled in Group A there were 11 females and 10 males whereas Group B consisted of 9 females and 12 males. In total there were 20 females and 22 males enrolled.

Both bakuchiol and facial exercises significantly reduced the surface area involvement of forehead wrinkles when compared to baseline. Notably, significant changes from baseline were noted at the fourteen week time point. There was a significant difference in the reduction of length of the wrinkle between the two groups. Group A patients who used Topical 0.5% bakuchiol the reduction in the mean length of the forehead wrinkle was 2.243 whereas in Group B it was 1.436. This was statistically significant ($p < 0.05$). In Group A patients there was a reduction in the mean length of glabellar frown lines by 1.848 cm and in Group B the reduction in the mean length was 0.993 cm which was found to be statistically significant ($p < 0.05$). When compared to baseline, bakuchiol and facial exercises both significantly decreased the surface area involvement of crow's feet wrinkles. Significant

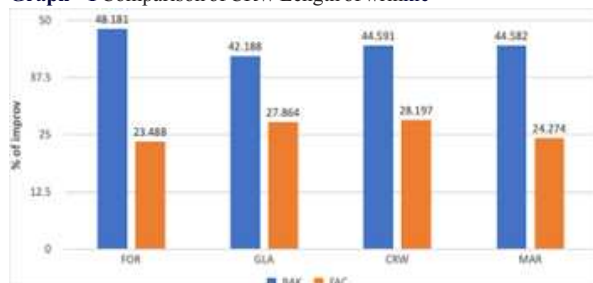
deviations from the baseline were observed at the fourteen week mark, which is noteworthy. The two group's reductions in wrinkle length differed significantly from one another. The mean length of the crow's feet wrinkle decreased by 1.779 cm in Group A patients who took Topical 0.5% Bakuchiol, while it decreased by 0.883 cm in Group B patients which was found to be statistically significant ($p < 0.05$). Group A patients experienced a mean reduction of 1.286 cm in the marionette line length, while Group B patients experienced a mean reduction of 0.883 cm. This was statistically significant ($p < 0.05$). On comparing the percentage of improvement between Group A and Group B a significant difference was observed. The percentage of improvement in Group A patients who used topical 0.5% bakuchiol was significantly higher than the Group B patients who followed a regime of facial exercises.



Figure 1: Improvement in Forehead wrinkle length in a patient who has applied Topical Bakuchiol 0.5% for 14 weeks.



Graph - 1 Comparison of CRW Length of wrinkle



Graph - 2 Comparison of % of improvement

DISCUSSION

While retinoids and bakuchiol both have anti-aging qualities, the molecule also triggers a unique set of molecular pathways that are involved in its anti-aging actions. Particularly, bakuchiol affects a number of antioxidant mechanisms. Bakuchiol also reduced the surface area and intensity of the pigment. This is due to the antioxidant properties of bakuchiol and its capacity to interfere with the formation of melanin. Bakuchiol is well-suited for usage in anti-aging and anti-hyperpigmentation cosmeceuticals due to its suppressive effects on the formation of cutaneous melanin. The indications of facial aging also significantly improved after a fourteen weeks at-home facial training plan. Exercise-induced muscular hypertrophy of the craniofacial muscles is the mechanism. By stimulating underlying muscle growth,

facial training can help revitalize the aging face, a trend that has recently attracted community attention. The average age of the patients with facial aging symptoms who were enrolled in this study was 51 years, which was consistent with the findings of the study by Lim HW et al³, which revealed that the average age was 51 ± 2 . According to our research, applying bakuchiol on a daily basis can result in noticeable improvements in anti-aging metrics. Over the course of the 14-week treatment, bakuchiol not only improved the depth of wrinkles but also reduced the intensity and surface area of pigmentation. This finding aligned with the research conducted by Dhaliwal S et al⁴, who found that Bakuchiol shows promise. We found that a 14-week regimen of 30-minute facial exercises each day may slightly enhance the appearance of people's facial features. Blinded evaluations of verified photos revealed a notable improvement in wrinkle length. This result was consistent with a study by Alam M et al⁵, that found that participants who engaged in a facial workout regimen saw a monotonic reduction in the length of their wrinkles. Based on our study's observations, Group A patients who used topical 0.5% bakuchiol showed a significantly greater percentage of progress in terms of the decrease of wrinkle area compared to Group B patients who underwent a fourteen facial exercise regimen. This indicates that topical 0.5% bakuchiol therapy is the most effective among the two.

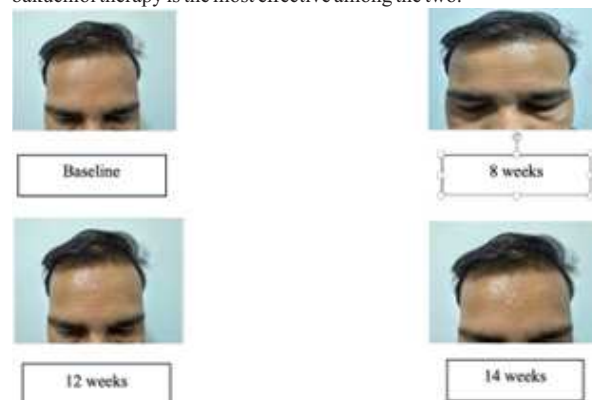


Figure 2: Improvement in Forehead wrinkle length in a patient who has followed a facial exercise regime for 14 weeks.

CONCLUSION

From the results of this study, bakuchiol and face exercises both show potential in the management of wrinkles. These methods have the potential to serve as a less harmful substitute for retinol. Our study's main objective was to compare the effectiveness of topical 0.5% bakuchiol and face exercises in treating wrinkles. We come to the conclusion that topical 0.5% bakuchiol is a more effective treatment for facial aging signs than facial exercises. Over the last decade, topical bakuchiol and facial exercises have gained popularity in the skincare operations as a natural substitute for topical retinol (all-trans-retinol) and have been identified in the literature as promising anti-aging methods. Our study further firms up the positive outcomes of these modalities in treatment of signs of facial aging.

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