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THE EFFECTIVENESS OF 0.1% ADAPALENE-GEL IN LOWERING SEBUM PRODUCTION IN INDIVIDUALS SUFFERING FROM GRIEVOUS ACNE-VULGARIS

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ABSTRACT

Background: The chronic skin condition known as acne-vulgaris is typified by pustules, papules, and comedones. It has been discovered that the utilization of adapalene as a management for acne-vulgaris is both safe and efficient in decreasing both inflammatory and non-inflammatory lesions.

Aim: to assess if individuals with grievous acne-vulgaris can reduce their sebum output with 0.1% Adapalene-gel.

Material and Methods: Topical 0.1% Adapalene-gel was administered to 100 individuals in order to measure its impact on SER in connection to a decrease in lesions in individuals with grievous acne. Eighty of these finished the six-week course of management as directed. With the utilization of a Sebumeter®, facial sebum discharges were calculated. Five distinct facial sites were chosen: the chin (the mental prominence), the right and left cheeks (the most notable part of the zygomata), the nose (the tip), and the forehead (the mid glabella).

Results: 22.5% of people had mild acne (Class I), 42.5% had moderate acne (Class II), and 27.5% had moderately severe acne (Class III). Ninety percent of the eighty participants who finished their six weeks of management saw a noticeable improvement in their acne overall. About thirty individuals (37.5%) exhibited a good improvement, while about 38 individuals (47.5%) showed great results. Only eight individuals, or 3%, had lesions that did not respond well. The T-Zone's average sebum excretion rate was 91.38±43.21 at baseline, but after six weeks of management, it was 82.61±40.50.

Conclusion:

Despite dramatically reducing acne lesions, 0.1% Adapalene-gel management did not result in a noteworthy decrease in MFSE. This suggests that comedogenesis is influenced by additional noteworthy elements.

Key Word: Acne-vulgaris, 0.1% Adapalene-gel, average facial sebum excretion

INTRODUCTION:

The pilosebaceous gland is the source of acne-vulgaris, a chronic inflammatory illness that primarily affects seborrheic areas like the face, back, and chest[1]. The development of papules, pustules, open and closed comedones (non-inflammatory lesions), and nodulocystic lesions (inflammatory lesions) are the hallmarks of the condition. Topical preparations are utilized as the only form of management for most individuals and are a staple of practically every subject's management plan[2-5]. Adapalene is an artificial derivative of naphthoic acid that has retinoid properties. Adapalene targets the areas of the skin and hair follicles, where it remains imprisoned after penetrating the stratum corneum and absorbing extremely slowly in the percutaneous layer. With low adverse effects and great efficacy, benzoene therapy is a viable choice for treating acne-vulgaris topically[6-8]. The goal of the current research was to determine whether 0.1% Adapalene-gel might efficiently lower sebum production in individuals with grievous acne-vulgaris.

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MATERIAL AND METHODS

Over the course of six weeks, this prospective clinical trial was carried out. There were 200 people in total: 80 individuals in the control category and 120 individuals in the research category. The control category consisted of healthy, age-matched individuals. Since it is challenging to locate people who have never had an acne lesion, we included controls who had no visible acne at the time of measurement and had never had more than five acne lesions combined.

• Persons falling within the age range of 13 to 30 years old Both genders

New individuals with untreated acne-vulgaris.

Exclusion criteria

• Individuals who have undergone topical acne therapy in the last two weeks;

Individuals who have taken oral antibiotics or oral isotretinoin or systemic or topical anti-inflammatory medications administered during the last four weeks; expectant or nursing mothers

Women who are within the reproductive age range are not prepared to utilization birth control.

• A history of topical retinoid hypersensitivity.

Measurement of sebum discharge

Using the grease-spot photometry approach, facial sebum discharges were calculated with a Sebumeter® (SM 810; C-K Electronics, Cologne, Germany). Five distinct facial sites were chosen: the chin (the mental prominence), the right and left cheeks (the most notable part of the zygomata), the forehead (mid glabella), and the nose (the tip). Every location had its sebum collected using a plastic strip and 30 seconds of continuous pressure. Within two hours of the measurement, participants were instructed not to wash their faces or apply makeup. Average facial sebum excretion (MFSE) was computed and sebum discharge levels were noted. The measurement areas were divided into two categories: low sebum secreting zone (U-zone; both cheeks) and high sebum secreting zone (T-zone; forehead, nose, and chin). The same researcher carried out each management in a room with a constant temperature of 22 to 250 degrees Celsius. Eighty of the 120 acne individuals gave permission to be followed up with after six weeks. Sebum discharge was calculated both at baseline and six weeks into the 0.1% Adapalene-gel management. The sebum discharge recommendations that came with the sebumeter were utilized to determine the subject's facial skin types. Nevertheless, these recommendations cannot be utilized directly to identify the skin types of the TZone, the U-Zone, or the entire face (MFSE) beautification they only provide reference values for specific measurement sites. Thus, by computing the average value for each place, we were able to obtain new reference values for sebum discharge for these areas.

RESULTS

The research included 120 acne individuals (70 men and 50 women) and 78 controls (50 men and 28 women). The control category's average age was 20.03 years, whereas the acne subject category's average age was 20.3 years. These differences were statistically noteworthy ($P > 0.05$). Topical 0.1% Adapalene-gel was administered to 100 individuals in order to measure its impact on SER in connection to a decrease in lesions in individuals with grievous acne. Eighty of these finished the six-week course of management as directed. 22.5% of people had mild acne (Class I), 42.5% had moderate acne (Class II), and 27.5% had moderately severe acne (Class III). Ninety percent of the eighty individuals who finished their six weeks of management had a global improvement (good, fair, or excellent) in their acne from the beginning. About thirty individuals (37.5%) exhibited a good improvement, while about 38 individuals (47.5%) showed great results. Four (5%) of the individuals showed a moderate improvement. Only eight individuals, or 3%, had lesions that did not respond well. After six weeks of management, the average sebum excretion rate of T-Zone was 82.66±40.50, which was not statistically noteworthy ($P>0.05$) compared to the baseline of 91.38±43.22 (Table 1).

Table 1: Changes in lesions and average SER in T- zone on management with 0.1% Adapalene-gel

Term	Total Non-inflammatory lesions	Total Inflammatory lesions	Average sebum excretion rate(T- zone)
Baseline	19.66± 10.23	10.2±7.12	91.38±43.3
6 weeks	8.56±6.4*	1.10±1.25*	82.34±40.25
P value	< 0.05	< 0.05	> 0.05

Comparably, the average U-Zone sebum excretion rate at baseline was 61.8±49.5, and it increased to 54.38±38.22 after 6 weeks of management. This difference is statistically not noteworthy (P>0.05) (Table 2).

Table 2: Changes in lesions and average SER in U- zone on management with 0.1% Adapalene-gel

Term	Total Non-inflammatory lesions	Total Inflammatory lesions	Average sebum excretion rate (U- zone)
Baseline	22.54± 17.49	14.16±10.94	61.8±49.50
6 weeks	11.50±11.48*	1.42±2.32*	54.38±38.22
P value	< 0.05	< 0.05	> 0.05

Topical management was shown to noteworthy reduce both inflammatory and non-inflammatory acne lesions. However, at the T and U zone, no such decrease in the rate of sebum discharge was noted. A total of 84 adverse events were reported in the 80 individuals. Post-inflammatory hyperpigmentation (40%) was the most prevalent, followed by redness (17.5%), itching (17.5%), irritation (12.5%), and dryness (12.5%). Since all side effects ranged from grievous, they did not prevent the subject from finishing their management.

DISCUSSION

It is widely acknowledged that there is a relationship between the graveness of acne and facial sebum discharge; however, topographical variations in facial sebum discharge have not been taken into account in prior studies[9-11]. Based on the amount of sebum secreted, facial areas can be divided into T- and U-zones (high and low sebum secreting areas, respectively). To account for regional differences in sebum discharge, we assessed sebum discharge at five different places on the face in this research. Furthermore, our research only utilizations one observer, which lowers error. Our research is not without limits, though. The measurement region of the Sebumeter®, which was employed as a tool, is restricted to skin that makes contact with the cassette probe of the device. There could be a discrepancy between the sebum measuring area and the lesion count area, though, because the areas where lesions were counted were bigger than this one. Despite dramatically reducing acne lesions, our research using 0.1% Adapalene-gel did not demonstrate a noteworthy decrease in MFSE. The varied outcomes in various regions are explained by this research. This research, which we conducted on both men and women, is useful in understanding how men and women secrete sebum in distinct ways. Therefore, the relationship between sebum discharge and the emergence of acne lesions in men may be different. This research also utilizations a larger sample size and more trustworthy methodology than any other previously published research[12,13].

According to Percy SH's research, at the conclusion of management, 96.3% of individuals had improved from the beginning of their acne, with more than 75% of individuals showing improvement. Of the individuals, 24% had reported adverse effects, none of which were considered critical. According to their findings, Indian individuals with grievous acne-vulgaris can benefit from the topical management with Adapalene-gel 0.1%, which is both safe and efficacious. A meta-analysis by Cunliffe et al. of five sizable trials with over 900 individuals spread over a 12-week period showed that adapalene 0.1% gel is just as successful as tretinoin 0.025% gel. Both medications were just as efficient after 12 weeks, while adapalene showed less discomfort and a quicker start of action.

For a term of three months, Grosshans et al. compared 0.1% adapalene and 0.025%

tretinoin on 105 individuals, while Ellis et al. evaluated the two managements on 297 individuals. There was no difference in the medications' respective efficacies in these two studies. Cunliffe et al. compared 0.025% tretinoin and 0.1% adapalene on 323 individuals over the course of three months in another research. They discovered that compared to tretinoin, adapalene reduced total and non-inflammatory lesions more. Regarding inflammatory lesions, there was no discernible variation. Adapalane works better on non-inflammatory lesions than on inflammatory lesions, as shown by Korkut and Piskin's research.

Conclusion:

In conclusion, despite dramatically reducing acne lesions, 0.1% Adapalene therapy did not noteworthyly lower MFSE. This suggests that comedogenesis is influenced by additional noteworthy elements. This research, which we conducted on both men and women, is useful in understanding how men and women secrete sebum in distinct ways. Therefore, the relationship between sebum discharge and the emergence of acne lesions in men may be different. This research also utilizations a larger sample size and more trustworthy methodology than any other previously published research.

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