AN OBSERVATIONAL STUDY ON THE EFFICACY OF A BLACK ACETIC ACID COMBINATION PEEL IN PEOPLE WITH FACE NODULOCYSTIC ACNE

Reshma.J.A[1], A.J.S Pravin[2]*, Vivekanand.K[3]

[1]Sree Mookambika institute of medical science, Kulasekharam, Email Id; drreshmadharma@gmail.com

[2]HOD & Professor of Dermatology Department , Sree Mookambika institute of medical science, Email id; pajspravin@gmail.com

[3]Associate professor, Sree Mookambika institute of medical science, Email id: drvivekanandh@gmail.com

Abstract:

Nodulocystic acne is a severe kind of acne that can significantly lower quality of life and result in significant physical and psychological harm. Oral isotretinoin is regarded to be the best course of treatment in these conditions. Even though it has a high rate of success and has been shown to be effective in the treatment of nodulocystic acne, it may occasionally fail to achieve the desired level of disease control. There are times when the use of this drug is limited by established contraindications, recognised side effects, and the amount of time needed to reach the cumulative dose. A prospective observational study focusing on 12 patients who frequently presented to OPD with facial nodulocystic acne and had poor adherence to isotretinoin treatment due to its side effects, the medication's failure to live up to patients' expectations, or any isotretinoin use contraindications was included. As an alternate treatment, a peel made of black acetic acid, jasmonic acid, salicylic acid, and potassium iodide (the "black peel," Theraderm) was applied topically over the course of three treatment sessions spaced by two weeks. After three "black peel" sessions spaced two weeks apart, there was a noticeable reduction in nodulocystic lesions. Out of the 12 patients, 50% responded very well, 40% responded well, and none did not respond at all. A difference between the pre-treatment and post-treatment ISGA scores of 3.50 and 0.40 (p 0.001) was found.

Keywords: nodulocystic acne, black peel, Theraderm, isotretinoin, Acne vulgaris, Acne conglobate

Introduction:

One of the most prevalent skin conditions, acne vulgaris can affect anyone at any age, but it mostly affects teenagers. Acne is a complex chronic inflammatory condition of the pilosebaceous units[1, 2]. Seborrhea, comedones, erythematous papules and pustules are some of the different clinical manifestations, as are less commonly occurring nodules, deep pustules, or pseudocysts, and in a small number of cases, scarring as a result. Propionibacterium acne (P. acne) colonisation, elevated sebum production, follicular hyperkeratinization, and the end products of inflammation are the four basic pathogenetic mechanisms of acne[3-5]. The main form of treatment for nodulocystic

acne is oral isotretinoin. Despite being a highly successful medication, it has been linked to several reports that detail a variety of systemic negative effects. Additionally, it can cause acne lesions to intensify, leading to acne fulminans, a particularly severe form of acne that is characterised by systemic symptoms like fever, weight loss, myalgia, and arthralgia[6, 7]. In this study, we treated patients with nodulocystic acne who were unresponsive to oral isotretenoin with a more recent organic peel formulation called the "black peel" (Theraderm), which contains black acetic acid, jasmonic acid, salicylic acid, potassium iodide, and biosulfur. After three treatment sessions spaced out by two weeks, the severity of the acne lesions was significantly reduced. When isotretinoin fails to produce the desired level of results, "black peel" might be utilised as an optimistic and promising alternative treatment for nodulocystic acne.

Methods:

The aforementioned prospective observational study was carried out in the Department of Dermatology at the Sree Mookambika Institute of Medical Sciences in Kulasekharam, Tamil Nadu, India, between December 2022 and May 2023. The study comprised 7 individuals with face nodulocystic acne who had poor compliance with isotretinoin treatment, failed to achieve predicted disease control, or had any known contraindications to using isotretinoin in the age range of 15 to 45 years. Before beginning the peeling sessions, the medicine was stopped for at least two months. On the basis of typical clinical symptoms, a diagnosis was determined. Each patient's skin was carefully cleaned and tonified before a comedone was extracted, if necessary, and a black peel was applied using a toothpick. After 10-15 minutes, the peel was removed and cleaned with regular saline. Last but not least, a heavy layer of sunscreen was applied to the entire face. Antibiotics and painkillers were provided for five days after each treatment to prevent subsequent infection, erythema, and discomfort from comedone extraction. Additionally, a facial cleanser and sunscreen were advised for daily use. Every two weeks, a maximum of three black acetic acid-containing peel treatment sessions ("black peel") were conducted. The investigators' static global assessment (ISGA) scale (Table 1), which has six levels ranging from Grade 5 (severest) to Grade 0 (clear), and the patients' self-satisfaction assessment scale, which has five levels ranging from excellent (4) to aggravation (0), were used to make the final determination two weeks after the last treatment. Each session, the patient had their potential harmful effects assessed. If the patient's acne completely cleared up, the treatment was rated as having produced good results. Rare non-inflammatory papules that almost completely cleared acne were scored as having a good reaction, whereas individuals who showed no response to treatment or who saw their condition get worse were rated as having a bad response.

Table 1: Scale for static global assessment by investigators

GRADE	DESCRIPTION
Grade 0	Normal, clear skin devoid of acne vulgaris symptoms.

Grade 1	Rare non-inflammatory lesions on the skin that are nearly clear and present with papules that may be hyperpigmented but are not pink or red did not require any additional therapy in the investigators.
Grade 2	Few inflammatory lesions (just papules/pustules, no nodulocystic) and few non-inflammatory lesions are observed.
Grade 3	The majority of lesions are non-inflammatory, however there are numerous inflammatory lesions visible, including several comedones, papules/pustules, and possibly one or more tiny nodulocystic lesions.
Grade 4	More inflammatory lesions are visible, including several comedones, papules/pustules, and possibly a few nodulocystic.
Grade 5	Variable numbers of comedones, numerous papules and pustules, and nodulocystic lesions are the most common highly inflammatory lesions.

Results:

Based on the ISGA and the patients' self-satisfaction rating scale, the results shown in Figures 1-3 were observed two weeks following the three black acetic acid combination peel treatments.

Table 2: Demographic distribution of patients.

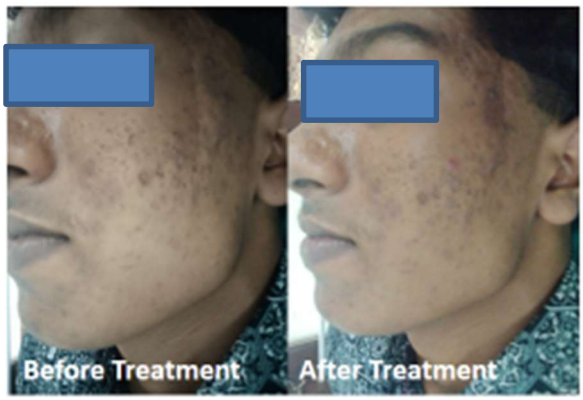
GENDER	TOTAL NO. OF PATIENTS	PERCENTAGE
Male	6	50%
Female	6	50%

Out of the twelve patients (12) in our study, six of whom were men and six of whom were women (Table 2), 50% of patients (six out of twelve) showed an excellent response with complete clearance of acne (ISGA 0), and 40% of patients (five out of twelve) showed a good response with nearly clear skin and infrequent non-inflammatory papules (ISGA 1).

Figure 1: An ISGA grade 4 patient's response to three sessions of "black peel"

After three black peel sessions, the acne has almost cleared up (Good reaction). The ISGA score went from 5 to 1.

Figure 2: The patient's response to three black peel treatments in an ISGA grade 4 patient.



After three black peel sessions, all acne has completely cleared up (great reaction). The ISGA score went from 4 to 0.

Figure 3: The patient's response to three black peel treatments in an ISGA grade 4 patient.

After three black peel sessions, all acne has completely cleared up (great reaction). The ISGA score went from 4 to 0.

In my investigation, none of the patients (out of 12) had a poor reaction with non-responsiveness or exacerbation on treatment.

Table 3: Average difference between pre- and following treatment ISGA scores.

	Pretreatment median ISGA	Posttreatment median ISGA
Males	3.5	0.3
Females	3.3	0.4
Overall average	3.4	0.40

Discussion:

In youth, acne is the most prevalent chronic skin condition, impacting 80% of young people. It has a negative economical and emotional effect, and the latter gets much worse as the sickness gets worse[1, 5]. Nodulocystic acne, among other severe kinds of acne, is difficult to cure and always necessitates systemic therapy. There are a variety of therapy choices, such as oral antibiotics, hormonal antiandrogens for female patients, oral isotretinoin, and other combination therapies. Systemic isotretinoin is a very helpful medication for treating moderate acne that is resistant to

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conventional therapy, leaves physical scars, or causes significant psychological anguish in addition to severe refractory acne[4, 6]. It is regarded as the only medication that addresses all four acne aetiology and is thought to permanently alter the course of the illness in its most severe manifestations. It lessens P. acnes follicular colonisation, comedone production, sebaceous gland size, and sebum secretion[8-10]. Nevertheless, the documented severe systemic side effects of isotretinoin, including liver damage, depression, behavioural changes, suicidal ideation, and teratogenicity, have created a barrier to its use, as it has been advised by many clinicians to limit such treatment to those with severe recalcitrant acne[11, 12]. A novel chemical compound called "black peel" is made of black acetic acid combined with biosulfur, salicylic acid, jasmonic acid, and potassium iodide. In Japan and Korea, black acetic acid, also known as fermented vinegar, has a long history of production. Higher concentrations of organic acids and amino acids define it. Black acetic acid has a number of positive benefits that have been noted, including anti-tumor, anti-oxidant, and anti-hypertensive [13-16]. Additionally, when applied topically to the skin as a skin dressing, black acetic acid exhibits the strongest bactericidal action against all strains examined. According to empirical data, a large number of South Koreans use black acetic acid as a topical wash as well as a drink to maintain good skin. For serious wounds brought on by vacuities and profound fungal infections, potassium iodide (KI) was administered irrationally. It operates as an anti-infective, anti-bacterial, and anti-fungal agent and can be applied topically to treat various skin diseases. When applied topically to inflammatory lesions and cysts, it appears that the iodide dissolves the fatty, oily material present in the cysts, allowing our body to gradually reabsorb and get rid of it. This causes the lesions and cysts to disappear in a week or two. Numerous studies have shown that it is effective for treating inflammatory dermatoses, most notably erythema nodosum, subacute nodular migratory panniculitis, nodular vasculitis, erythema multiforme, and Sweet's syndrome[17-20].

When a plant is attacked or damaged, it releases two acids to defend itself: jasmonic acid and salicylic acid. Jasmonic acid stimulates the production of protease inhibitors, which can prevent dangerous insects from attacking. Salicylic acid and jasmonic acid both have anti-inflammatory and exfoliating properties that can induce a favourable response in the living layers of skin by addressing a number of symptoms related to skin impairment. They both play a significant role in the pathogen defence response. Methyl jasmonate was administered topically twice daily to 8 individuals with preneoplastic and malignant lesions in a research by Palmieri et al. Three months after treatment, 32% (3 out of 8) of the patients showed signs of improvement[21]. Biosulfur is helpful for acne because it aids in the killing of skin-surface bacteria, which improves the symptoms of acne, pimples, seborrhea, and psoriasis. It has both keratolytic and germicidal effects[22]. For facial acne, scarring, and hyperpigmentation, many doctors like Elghblawi have utilised different peeling agents such black acetic acid with outstanding results after just one session of therapy, but there haven't been many well-controlled trials contrasting them with other conventional agents[23]. An additional research study comparing the peeling effects of black peel and Coomb's solution on acne found similar results for both, but in the Coomb's area, there were significant post-inflammatory alterations that weren't present in the "black peel" area. We found

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very little to no adverse effects in our study, such as erythema or post-inflammatory alterations. Additionally, comparable results were seen in our study, but none of our patients displayed a bad response. In our study, we found that post-treatment ISGA score was 0.4 compared to pre-treatment score of 3.4 (p0.001) (Table 2), with great response in 50% of patients and good response in 40% of patients.

Conclusion:

The "black peel" contains black acetic acid, KI, salicylic acid, and jasmonic acid and is quite efficient on comedones and pigmentations, among other skin issues. When isotretinoin falls short of patient expectations, in patients who are not complying with treatment, or in situations where its use is prohibited, "black peel" can be utilised as a hopeful and promising alternative treatment for nodulocystic acne. Peeling treatment was found to have no significant side effects, making it a secure and reliable method of regaining the patient's self-esteem.

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Competing interests:

Authors declare no competing interest

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