

# A PRE AND POST TEST STUDY TO ASSESS THE EFFICACY OF ARJUNADI LEPA IN ACNE SCARS

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## ABSTRACT

**Background:** Acne breakouts can be frustrating and they can also leave scars on the face and other areas of the body. Some people find that acne scars are an unwanted reminder of a painful and bothersome condition. So clearance of scars is the first request of acne patients. But this condition attracted the least attention in Ayurveda and there are no much studies on facial acne scars using Ayurvedic formulations. The drugs which possess the properties like Varnya, Lekhana, Vyangaghna may help to clear dirt, dead skin cells and other debris that leads to acne from the pores of skin and further help to minimize the appearance of scarring. **Aim and Objectives:** The aim of the study is to assess the efficacy of Arjunadi lepa in acne scars. **Materials and Methods:** The study was conducted in 30 diagnosed patients of acne scars and they were treated with Arjunadi lepa told by Acharya Sharangadhara among Varnya lepa for 14 days. The pre and post findings were recorded in research proforma and patients were followed up for next 7 days. **Results and Conclusion:** Response to the treatment was recorded after 14 days of continuous application of Arjunadi lepa and therapeutic effect was evaluated through symptomatic relief. The study yielded statistically significant results and it also helps to improve the facial skin texture.

**Key words:** Acne scars, Arjunadi lepa, Varnya lepa

## INTRODUCTION

The human face can be thought of itself as an “oil painting”, a frame work of art. Like a beautiful portrait a face is complimented by the skin (canvas), hair (frame) and teeth (matte). Facial beauty offers confidence, personality, and it reflects self-esteem of a person. But face is one among the most exposed part of the body and if such an important part of the body gets disturbed by any pathology, it not only affects the physic of a person but also the psychology of the person.

Acne vulgaris is one of such skin conditions which has parlance with “Mukhadooshika” in Ayurveda, which is explained under *Kshudraroga*. The major outcomes of these inflammatory acne lesions are acne scars. Acne scars can result by picking blemishes or by body’s natural attempt to heal itself. When skin pores engorged with excess oil, dead skin cells and bacteria, it swells, causing a break in the follicle wall, then the skin attempts to repair these lesions by forming new collagen fibers. These repairs are usually aren’t as smooth and flawless as the original skin resulting with scar formation<sup>[1]</sup>.

The treatment modalities and other management strategies for acne scars are usually unsatisfactory as it shows exacerbation and remission from time to time because of various influencing factors such as frequent exposure to unwholesome food habits, pollution, stress, and hormonal variations. *Bahi Parimarjana Chikitsa* (external applications) has a major role to play in the treatment of acne scars. *Sharangadhara Samhita* reveals some group of drugs that is, *Varnya lepa*, among them one formulation containing 3 drugs namely *Arjuna* (*Terminalia arjuna* Roxb.ex DC), *Manjishtha* (*Rubia cordifolia* L.), and *Madhu*<sup>[2]</sup> were selected for the study. *Varnya lepa* is basically meant for the task of restoring the natural color and complexion of the skin. The present study was aimed at evaluating the efficacy of an Ayurvedic formulation- *Arjunadi Lepa* in acne scars.

## MATERIALS AND METHODS

### Selection of patients:

Total 30 patients irrespective of sex, caste, religion, and socioeconomic status who were diagnosed to have Acne scar were selected from the Outpatient Department and Inpatient Department of *Shalakyata Tantra*, Alvas Ayurveda Medical College, Moodubidire, D.K, Karnataka. An informed consent from each patient was obtained before starting the course of treatment. The study design was a single blind clinical study of 14 days with a pre, post, and follow-up assessment after 07 days.

### Diagnostic criteria:

Patients diagnosed with post acne scars over the face.

### Inclusion criteria:

### Assessment criteria:

The pre and post therapeutic assessment of the patients was done based on the symptomatic relief using SCAR-S grading system<sup>[3]</sup>. The global evaluation scale modified for acne-scarring, SCAR-S is as follows:

Category	Score	Description
1. Clear	0	No visible scar from acne.
2. Almost clear	1	Hardly visible scars from 2.5 m away.
3. Mild	2	Easily recognizable, less than half the affected area (e.g. face, back

Patients fulfilling the diagnostic criteria, between the age group 16 and 35 years, irrespective of sex, religion, occupation, and chronicity were selected for the study.

### Exclusion criteria:

Patients having scars of other *Kshudra roga* and *Kushta*, hyperpigmentation caused due to any systemic diseases such as Addison's disease, Cushing syndrome and systemic lupus erythematosus, hyperpigmentation since birth like nevus and those caused by tumors such as malignant melanoma were excluded.

### Posology:

Lepa (paste) was prepared by using fine powder of *Arjuna twak* and *Manjishtha* in equal quantity and honey as media for mixing. A semi-thick paste was prepared out of it. The patients were advised to wash the face with plane water followed by application of *Lepa* according to thickness of *Varnya lepa* (approximately 0.5cm to 0.8cm thickness) from medial to lateral direction (opposite to the direction of hair follicles) in sufficient quantity, so as to cover the affected areas effectively. Freshly prepared *Lepa* is applied once in a day (within 5pm on every day and almost in a particular time). Patients were advised to wash the face with plane water after 30 minutes and not to use any other face creams during the period of treatment.

The raw drugs required for the study were procured from Alvas Ayurveda Pharmacy, Mijar and authenticated at the Department of *Dravya Guna*, AAMC, Moodubidire, Karnataka.

		or chest) involved.
4. Moderate	3	More than half the affected area (e.g. face, back or chest) involved.
5. Severe	4	Clear Entire area involved
6. Very severe	5	Entire area with prominent atrophic or hypertrophic scars.

[To be independently applied to face, chest and back. The overall score is the sum of scores from each of these sites.

**Other assessment criteria include skin texture (dry/oily) and luster of skin:**

Parameters:	Score:
<b>1. Skin texture(dryness):</b>	
Absent	0
Mild (not seen but felt)	1
Moderate (stretching of the skin that a person feels)	2
Severe (visible dryness chapping of skin-hardness of skin)	3
<b>2. Skin texture(oiliness):</b>	
Absent	0
Mild (not seen with naked eye, oiliness felt by touch, no need to wash face frequently, only 1-2 times)	1
Moderate (visible on skin, need to wash the face frequently)	2
Severe (excessive oiliness, formation of acne)	3
<b>3. Skin luster:</b>	
Poor	1
Mild	2
Moderate	3
Good/ radiant	4

#### Overall assessment:

Overall assessment was done on the basis of following criteria:

CD – Clinically deteriorated that is, increase in severity score against initial score

CS – Clinically stable that is, severity of score remains same as against initial score

CI-1 – Clinical improvement (CI) mild that is, one grade reduction against initial score

CI-2 – CI moderate that is, two grade reduction against initial score

CI-3 – CI good that is, three grade reduction against initial score.

#### Statistical

The data obtained were tabulated and statistically calculated using Wilcoxon signed rank test.

#### analysis:

#### OBSERVATIONS

34 patients were registered for the study, Out of this, 30 patients completed the study. Observations revealed that 40% of patients were from the age group 26 to 30 years followed by age groups 16 to 20years (26.6%). 86.6% of patients were females. 53.3% of patients had a positive family history. 93.3% of patients were non-vegetarians. 40% of patients had the habit of picking the blemishes. 66.6% of patients were from middle class family. 43.3% of patients had stress and worries as aggravating factor. 50% of patients had irregular menstrual history. 53.3% of patients had mild and 13.3% patients had moderate severity of acne scars.

66.6% of patients had more acne marks over the cheeks. 70% of the patients had chronicity of 0-5 years.

## RESULTS

The results of the present study were analyzed statistically. All the patients were taken for statistical analysis excluding the drop outs. The median of SCAR-S scores of 30 patients before treatment was 2.000 and after treatment, it reduced to 1.000.

### Results on Acne scar:

Wilcoxon sign rank test showed reduction in acne scars between BT, AT and follow up in subjects which is significant at all stages  $p < 0.001$ .

### Assessment of clinical improvement (CI) in the parameters is as follows:

Acne scars: 80% patients had grade 1 CI. Skin texture (dryness): 16.6% patients had Grade 1 CI. Skin texture (oiliness): 56.66% patients had Grade 2 CI. Skin luster: 90% patients had Grade 1 CI. The overall assessment of the study reveals that 05 (16.66%) patients were said to be clinically stable, 24 (80%) patients had mild improvement, and 01 (3.3%) patients had moderate improvement in acne scars.

### Wilcoxon Signed Rank Test

Group	N	Missing	Median	25%	75%
BT	30	0	2.000	2.000	3.000
AT	30	0	1.000	1.000	2.000

$$W = -276.000 \quad T^+ = 0.000 \quad T^- = -276.000 \quad (P = < 0.001)$$

The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference ( $P = < 0.001$ ).

### Results on Dryness:

Wilcoxon sign rank test showed reduction in acne scars between BT, AT and follow up in subjects which is significant at all stages  $p = 0.031$ .

## Wilcoxon Signed Rank Test

Group	N	Missing	Median	25%	75%
BT	30	0	0.000	0.000	0.000
AT	30	0	0.000	0.000	0.000

W= -21.000 T+ = 0.000 T- = -21.000 P(est.)=0.026 P(exact)= 0.031

The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = 0.031).

**Results on oiliness:**

Wilcoxon sign rank test showed reduction in acne scars between BT, AT and follow up in subjects which is significant at all stages  $p < 0.001$ .

## Wilcoxon Signed Rank Test

Group	N	Missing	Median	25%	75%
BT	30	0	2.000	0.000	3.000
AT	30	0	0.000	0.000	1.000

W= -231.000 T+ = 0.000 T- = -231.000 (P = <0.001)

The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = <0.001).

**Results on luster:**

Wilcoxon sign rank test showed reduction in acne scars between BT, AT and follow up in subjects which is significant at all stages  $p < 0.001$ .

Wilcoxon Signed Rank Test					
Group	N	Missing	Median	25%	75%
BT	30	0	2.000	2.000	2.000
AT	30	0	3.000	3.000	3.000

W= 465.000 T+ = 465.000 T-= 0.000 (P = <0.001)

The change that occurred with the treatment is greater than would be expected by chance; there is a statistically significant difference (P = <0.001).

**Results of overall assessment on acne scars:**

Clinical improvement	Number of patients	percentage
Clinically deteriorated	00	00.00
Clinically stable	05	16.66
Mild improvement	24	80.00
Moderate improvement	01	03.33
Good improvement	00	00.00

Before and after treatment Figures:





## DISCUSSION

Beauty presents a standard of comparison, and it can cause resentment and dissatisfaction when not achieved. People who do not fit the “beauty ideal” may be ostracized within their communities. According to Ayurveda healthy skin is a result of overall health condition of individual and prescribes numerous skin care treatment that needs to be pursued at every stage of life. In the present study conducted on 30 patients to know the efficacy of *Arjunadi lepa*, it has been observed that the drug has shown statistically significant results in the management of acne scars within duration of 14 days. Out of 30 patients 24 patients shown grade 1 improvement and 1 patient shown grade 2 improvement on acne scars within this period. In case of oiliness 16 patients got grade 2 improvement and 09 patients got grade 1 improvement. 05 patients with dryness shown grade 1 improvement by the treatment. It was observed that during treatment period the development of new acne vulgaris were reduced and new acne leaves very minimum marks on face than usual. The changes that occurred by the treatment were continued even at the time of follow-up. 06 patients developed mild itching for first 3 to 4 days of application without any allergic reactions.

The drug *Arjuna* is having *Kashaya rasa*, *Laghu-Rooksha guna*, *Sheeta veerya* and *Katu Vipaka*. It does the *karmas* like *Ropana*, *Vyangaghna* and *Vranahara*. The drug *Manjishta* possesses *Madhura-*

*Tikta-Kashaya rasa*, *Guru guna*, *Ushna veerya* and *Katu Vipaka*. It has *Varnya* and *Vyangaghna* actions. The medium *Madhu* (Honey) has the property of *Varnya*, *Prasadana* (clearing), *lekhana* (scraping), *Sukshmaamarganusaari* (ability to permeate in micro channels) and it act as *Yogavahi* (Catalyst). *Madhu* is *Madhura pradhana Kashaya anurasa dravya* with *Guru-Rooksha guna*, *Sheeta veerya* and *Katu vipaka*.

The rationality of the mode of action can be analyzed in three steps.

Step 1 - *Lepa* comes in contact with the *Roma* and *Romakupa* which in turn are connected to the *Tiryak Gata Dhamanis*,<sup>[4]</sup> which perform the function of *Sweda Vahana* that is the active drug enters the sweat ducts and hair follicles. Hair follicles represent a reservoir that may store topically applied substance. Differences in the follicular penetration are observed in different ethnic groups. Hair follicles appear to present an important pathway for percutaneous absorption in nondiseased skin. Even solid particles may enter deep into the follicular orifice, a phenomenon that lends itself to the concept of follicular targeting of drugs. It was found that nanoparticles were stored 10 times longer in the hair follicles than in the stratum corneum; it should be noted that when topically applied substances penetrate into the hair follicles, they do not necessarily penetrate through the skin barrier into the living tissue because hair follicles also have barrier properties.<sup>[5]</sup>

Step 2 - After the contact of the drug, there is *Paka* (metabolism) of *Dravya* (external application) in *Twacha* (skin). *Paka* refers to the action of *Bhrajaka Agni* and *Rasa Dhatwagni*. It occurs by virtue of *Ushna Guna* (warmth) of *Bhrajaka Pitta*, i.e. it takes up and metabolizes the *Kriya Dravya* (externally applied drug). This *Ushma* (warmth) present in *Lasika, Rasa, Rakta, Twacha*, maintains the *Dravatva* in *Rasa* and *Rakta*, which in turn are responsible for *Varna Utkarsha* (improvement in colour).<sup>[6]</sup> These two steps correspond to the pathway across stratum corneum and viable tissue.

Step 3 - These steps finally lead to *Rasa Tarpana* (nourishment of the *Rasa Dhatu*) which is mainly achieved by *Udana*<sup>[7]</sup> and *Vyana Vata* that supplies *Anna Rasa* (nutrition) to the concerned *Shareera Ghataka* or *Avayava* (tissues of the body) and *Varna Utkarsha* (improvement in Varna) is thus achieved. Hence, it is quoted that *Varnasampannah Rasapurnatvat*.<sup>[8]</sup> It corresponds to the process of metabolism in skin. Metabolism in skin compartments plays a significant role in determining the fate of a topically applied active compound. Metabolic activity is found in the skin surface, appendages, the stratum corneum, and viable epidermis. The level of many enzymes is highest in the epidermis. The relatively large size of the dermal component may result in a significant role in the metabolism of topically applied substances.

## CONCLUSION

*Arjunadi lepa* on Acne scar has been a safe, cost-effective and easy preparation. The treatment duration being 14 days has shown statistically significant results. If the same treatment continued for longer duration we may expect better improvements as scar or wound healing require long period.

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