A Comparative Clinical Study of Shalmalikantaka arka along with Its Modified form as a Gel in Mukhadushika

*Indira.V[1] Upendra U Zala[2] Ganga R Hadimani [3] Reju krishnan [4]

[1.] *Associate professor, Dept. of Rasashastra & Bhaishajya Kalpana P.P Savani Ayurvedic college and hospital, Surat, Gujarat*

[2.] *Professor, Dept. of Rasashastra & Bhaishajya Kalpana, J.S. Ayurveda Mahavidyalaya, Nadiad Gujarat*

[3.] *Professor & H.O. D, Dept. of Shalakya tantra, J.S. Ayurveda Mahavidyalaya, Nadiad, Gujarat*

[4.] *Professor & H.O.D, Dept. of Dravyaguna P.P Savani Ayurvedic college and hospital, Surat, Gujarat*

doi.org/10.64643/IJIRTV12I12-202293-459

***Abstract*- Ayurveda, the oldest and well-established traditional system of medicine in India, focuses on preserving the health of a healthy individual and treating illnesses in the diseased. As described in *Kashyapa Samhita*, the internal attributes of a person are manifested externally, with the face serving as a reflection of one's personality. *Yauvanapidaka* (*Mukhadushika*), categorized under *Kshudra Roga*, is a prevalent dermatological condition affecting approximately 70–80% of adolescents and young adults. The present study was undertaken to assess the clinical effectiveness of *Shalmalikantaka Arka* and its modified gel formulation. A total of 60 participants were enrolled and treated over a study period that included a 30-day follow-up. The findings indicated no statistically significant difference between the two groups across all evaluation parameters; however, both treatments showed statistically significant improvement. In the context of modern-day usage, the gel formulation may be considered more suitable due to its ease of application and better patient compliance.**

Key words: **Arka Kalpana, Yauvanapidika, kshudra roga Shalmalikantaka**

I. INTRODUCTION

Ayurveda, the ancient and time-honoured indigenous medical system of India, is fundamentally rooted in the dual objective of maintaining the health of the healthy and curing the ailments of the diseased[1]. Historically, Ayurvedic pharmaceutics have evolved through various dosage forms tailored to meet the shifting physiological and environmental needs of the population. According to the *Kashyapa Samhita*, an individual's external physical expression is an intrinsic reflection of their internal health; thus, the face serves as the primary mirror of one's personality and systemic well-being[2].

In the contemporary era, there is a heightened global consciousness regarding both holistic health and aesthetic complexion. These two elements are increasingly viewed as two sides of a single coin. Among various dermatological concerns, acne vulgaris[3] (*Yauvana Pidaka*) stands as the most prevalent skin ailment affecting teenagers and young adults. While often classified as a self-limiting condition, its tendency to disfigure the face—the most essential part of bodily identity—leads to significant psychological distress. In classical Ayurvedic texts, the terms *Mukhadhooshika*[4] and *Yauvana Pidaka* are employed synonymously to describe this condition.

The *Arka Prakasha*[5], an authoritative classical text attributed to Lankapati Ravana, provides sophisticated therapeutic interventions for *Mukhadhooshika*, notably within the seventh chapter, *Kesakrishnakara Yoga*[6]. Among the various traditional formulations, *Arka Kalpana* (distillation) represents one of the most refined methods of drug extraction. *Arka* is characterized by its specific potency, reduced dosage requirements, enhanced shelf life, and rapid absorption, making it a premier choice for supporting patient adherence in today's fast-paced world. As *Shalmalikantaka* is used as major ingredient in the *arka* preparation, so the selected present reference of *arka kalpana* is been termed as *Shalmalikantaka arka.*

In the current pharmaceutical landscape (*Adhunika Kala*), the external administration of drugs has been revolutionized by the development of creams, ointments, and gels. By modifying traditional herbal formulations into these modern delivery systems, it is possible to not only increase their market viability but also significantly enhance their therapeutic efficacy,

stability, and user acceptability. This study aims to bridge the gap between the distilled wisdom of *Arka Kalpana* and modern topical pharmaceutics ie, gel[7] to provide an effective solution for *Yauvana Pidaka*.

II. AIM & OBJECTIVES

To clinically evaluate both the forms of formulations in management of *Mukhadhooshika.*

III. MATERIALS AND METHODS

Ingredients of *Shalmalikantaka arka*[8].

Sl.No	Ingredient	Scientific name	Useful part	Quantity/Ratio
1	Course powder of *Shalamali kantaka*	*Salmalia malabarica*	Kanataka/bark	1 Part
2	*Go Dugdha* (cow milk)	-	-	10 Parts
3	*Jala* (arrow water)	-	-	

Method of preparation:
Freshly collected *Shalamalikanataka* are cleaned properly and kept in stainless steel tray for drying. After 2 days of sun drying, the drug is powered in pulveriser. The powder is filtered through the sieve no.80. The measured quantity of *Shalamalikantaka choorna* was taken in clean stainless-steel vessel added 5 parts of boiled cooled cow's milk and mix thoroughly with a clean stainless-steel spoon. The mixture was then kept closed for 1yama (3 hour) for soaking. This mixture was then made into fine paste by adding water. This fine paste was then transferred to distillation apparatus. The Prepared Arka (60% distillate) was collected and stored in tightly stoppered glass bottles.
Ingredients of *Shalamalikanataka arka* gel:

Sl. No.	Ingredients	Ratio
1	Distilled water	30 ml/QS
2	Carbopol 940	1 gm
3	Shalmalikantaka arka	70 ml
4	Vitamin E	2ml
5	Glycerine	4ml
6	Tri ethanol amine	20 drops

Preparation of gel:
Measured quantity of methyl paraben and water was taken in clean beaker and kept on water bath for heating at 75 to 80o C for getting a uniform mixture. Carbopol 940 is then added to this uniform mixture and stir continuously until it dissolves completely (part A/phase A).
In Another clean beaker measured quantity of arka, vitamin E and glycerine were taken and mix properly (part B/Phase B). After proper mixing, the mixture part B was transferred to part A mixture. Finally add tri-ethanol amine and whole mixture was allow to form gel for 4-6 hours. Prepared gel was stored in air tight glass container.

DRUG SOURCE:
Shalmalikantaka was freshly procured from J & J Science college, Nadiad. Before processing, the drugs were authenticated at PG Department of Dravyaguna, JS Ayurveda Mahavidyalaya, Nadiad.
Pharmaceutical study of Shalmalikantaka arka & Shalmalikantaka arka gel were prepared in the pharmaceutical laboratory of PG & PhD Department of Rasashastra evam Bhaishajya Kalpana, J.S. Ayurveda Mahavidyalaya, Nadiad.
Patient source: 60 subjects fulfilling the diagnostic and inclusion criteria were randomly selected by a computer-generated randomization chart, irrespective of sex, religion, occupation, socio-economic status and assigned into two equal groups (Group A and Group B). Patients who attended the out-patient department (OPD) of Shalakya department in the academic hospital attached with J. S. Ayurveda Mahavidyalaya, Nadiad were selected after taking informed written consent.
Methods of data collection:
Design of the study: Open labelled randomized comparative clinical study
Criteria for selection of patients:

INCLUSION CRITERIA:
•Patients having symptoms of *Mukhadushika* as mentioned in Classics are included.
• Patients between the age group of 13 years to 30 years, irrespective of religion, sex, socio-economic status, occupation are included for the study.

EXCLUSION CRITERIA:
• Patients having *Pidakas* of other *Kshudra Roga* and *Kushta* were excluded.
• Patients associated with any Systemic and metabolic disorders were excluded.
• Patients of the age group less than 13 years and more than 30 years were excluded.

Diagnostic criteria: As per the clinical features of *Mukhadushika* mentioned in classics, cases were diagnosed based on the following lakshanas:-

- *Shalmalikantaka Sadrusha Pidaka*
- *Saruja*
- *Medogarbha*
- *Ghana Shotha*

LABORATORY INVESTIGATIONS: There are no specific diagnostic tests for Acne Vulgaris; the diagnosis is primarily clinical and usually straightforward.

INTERVENTION:

Group- A: Shalmalikantaka arka: Subjects were asked to wash the face with fresh water prior to application of arka. Take 6-8 drops/sufficient quantity of arka and applied on effected area of face and give a gentle massage, allow it dry for 30 minutes, then face should be washed with Luke warm water. It was advised to apply in morning and evening.

Total study duration including follow-up: 30 days

Observational period: Application of arka is done for 30 days.

Subjects are assessed B.T and 30th day.

Group- B: Shalmalikantaka arka gel: Subjects were asked to wash the face with fresh water prior to application of gel. Sufficient amount of gel was taken and applied over the affected area of face. Massage gently for 1-2 minute and allow it to absorb for 30 minutes. Then face should be washed with lukewarm water. It was advised to apply in morning and evening.

Total study duration including follow-up: 30 days.

Observational period: Application of gel is done for 30 days.

Subjects are assessed B.T and 30th day.

CRITERIA FOR ASSESSMENT:

The improvement provided by therapy were assessed on the basis of classical signs and symptoms, all the signs and symptoms were assigned with a score depending upon their severity to assess the effect of the drugs objectively.

SUBJECTIVE AND OBJECTIVE CRITERIA:

Table C.A 1: Showing subjective and objective parameters

SUBJECTIVE PARAMETERS	OBJECTIVE PARAMETERS
Vedana in the *Pidaka*	Number of *Pidaka*
Shotha in the *Pidaka*	*Vivarnata* of the *pidaka*
Srava in the *Pidaka*	

GRADING OF SUBJECTIVE CRITERIA:

Table C.A 2: Showing grading of subjective criteria

(A)	SUBJECTIVE PARAMETERS		GRADE
1	*Vedana* of *Pidaka*	No tenderness	0
		Pain on deep pressure over the Pidaka	1
		Pain on touch over the Pidaka	2
		Pain without touch over the Pidaka	5
2	*Srava* In the *Pidaka*	No *Srava*	2
		Lasika Srava	3
		Puya Srava	4
		Pinjara Srava	5

GRADING OF OBJECTIVE CRITERIA:

Table C.A 3: Showing grading of objective criteria

(B)	OBJECTIVE PARAMETERS		GRADE
1	Number of *Pidakas*	No *Pidaka*	0
		1-5 *Pidakas*	1
		5-10 *Pidakas*	2
		More than 10 *Pidakas*	3
2	*Vivarnata* of the *Pidaka*	Normal skin colour	0

		Black colour	1
		Brown colour	2
		Red colour	3

IV. RESULT

STATISTICAL ANALYSIS

The effect of the drugs used has been critically analysed by the statistical data. The subjects were assessed before treatment and after treatment as per the assessment criteria mentioned earlier. Effect of the therapy on each criterion is presented here under separate heading. Post therapeutic effect of the drug administration in both groups were assessed by Mann-Whitney U-Statistical Test; individual group were analysed with the help of Friedman test, individual variables in both groups were analysed with the help of Chi square test. Level of significance was fixed at "P" less than 0.01.

Results of Therapeutic Trial:

Comparison between two groups representing vedana of pidaka

Table R 1: Showing comparison between two groups; Vedana of Pidaka

Variables	Group	N	Mean	SD	Mann-Whitney U test value	p-value	Remarks
BT Vedana in pidaka	Group A	30	1.567	0.679	380.5	0.263	Not Significant
	Group B	30	1.733	0.828			
8th day Vedana in pidaka	Group A	30	1.233	0.817	421.5	0.657	Not Significant
	Group B	30	1.3	0.794			
15th day Vedana in pidaka	Group A	30	0.633	0.718	424	0.679	Not Significant
	Group B	30	0.7	0.702			
21st day Vedana in pidaka	Group A	30	0.333	0.479	450	1	Not Significant
	Group B	30	0.333	0.479			
30th day Vedana in pidaka	Group A	30	0.3	0.466	495	0.38	Not Significant
	Group B	30	0.2	0.407			
After follow up Vedana in pidaka	Group A	30	0.267	0.45	495	0.357	Not Significant
	Group B	30	0.167	0.379			

Comparison between two groups representing srava in pidaka

Table R 2: Comparison between two groups representing Srava in the pidaka:

Variables	Group	N	Mean	SD	Mann-Whitney U test value	p-value	Remarks
BT Srava in pidaka	Group A	30	1.467	0.86	379	0.256	Not Significant
	Group B	30	1.733	0.785			
8th day Srava in pidaka	Group A	30	1.333	0.844	519	0.283	Not Significant
	Group B	30	1.133	0.86			
15th day Srava in pidaka	Group A	30	0.833	0.874	474	0.707	Not Significant
	Group B	30	0.7	0.651			
21st day Srava in pidaka	Group A	30	0.567	0.626	443.5	0.92	Not Significant
	Group B	30	0.567	0.568			
30th day Srava in pidaka	Group A	30	0.433	0.568	499.5	0.383	Not Significant
	Group B	30	0.3	0.466			
After followup Srava in pidaka	Group A	30	0.433	0.568	499.5	0.383	Not Significant
	Group B	30	0.3	0.466			

Comparison between two groups representing Number of pidaka

Table R 3: Showing comparison between two groups; Number of Pidakas:

Variables	Group	N	Mean	SD	Mann-Whitney U test value	p-value	Remarks
BT No. of pidaka	Group A	30	2.8	0.407	465	0.764	Not Significant
	Group B	30	2.767	0.43			
8th day No. of pidaka	Group A	30	2.233	0.728	569.5	0.037	Significant
	Group B	30	1.933	0.365			
15th day No. of pidaka	Group A	30	1.333	0.606	399	0.392	Not Significant
	Group B	30	1.433	0.568			
21st day No. of pidaka	Group A	30	0.967	0.556	437	0.815	Not Significant
	Group B	30	1	0.525			
30th day No. of pidaka	Group A	30	0.8	0.61	481.5	0.583	Not Significant
	Group B	30	0.7	0.466			
After follow up No. of pidaka	Group A	30	0.733	0.583	484	0.56	Not Significant
	Group B	30	0.633	0.49			

Comparison between two groups representing Vivarnata of Pidaka

Table R 4: Showing comparison between two groups in Vivarnata of Pidaka

Variables	Group	N	Mean	SD	Mann-Whitney U test value	p-value	Remarks
BT Vivarnata in pidaka	Group A	30	0.933	0.365	449	0.989	Not Significant
	Group B	30	0.933	0.254			
8th day Vivarnata in pidaka	Group A	30	0.867	0.346	450	1	Not Significant
	Group B	30	0.867	0.346			
15th day Vivarnata in pidaka	Group A	30	0.6	0.498	420	0.601	Not Significant
	Group B	30	0.667	0.479			
21st day Vivarnata in pidaka	Group A	30	0.367	0.49	405	0.441	Not Significant
	Group B	30	0.467	0.507			
30th day Vivarnata in pidaka	Group A	30	0.367	0.49	450	1	Not Significant
	Group B	30	0.367	0.49			
After followup Vivarnata in pidaka	Group A	30	0.333	0.479	435	0.795	Not Significant
	Group B	30	0.367	0.49			

Distribution of patients According to symptoms

The follow-up of patients has been done as regards the symptomatic improvement has been monitored 1st and 30th day.

Table No R 5: Showing symptomatic improvement in group-A and group-B

No	SYMPTOMS	GROUP A			GROUP B		
		BT (Mean ± SD)	AT (Mean ± SD)	% OF RELIEF	BT (Mean ± SD)	AT (Mean ± SD)	% OF RELIEF
	Vedana in Pidaka	1.57 ± 0.68	0.27 ± 0.45	82.82%	1.73 ± 0.83	0.17 ± 0.38	90.37%
	Srava in Pidaka	1.47 ± 0.86	0.43 ± 0.57	70.32%	1.73 ± 0.78	0.30 ± 0.47	82.66%
	No. of Pidaka	2.80 ± 0.41	0.73 ± 0.58	73.81%	2.77 ± 0.43	0.63 ± 0.49	77.14%

	Vivarnata of Pidaka	0.93 ± 0.37	0.33 ± 0.48	63.95%	0.93 ± 0.25	0.37 ± 0.49	60.38%

ASSESMENT OF TOTAL EFFECTOF THE THERAPY

Table R 6: Overall Effect of Group-A and Group-B

no.	Symptoms	% Improvement in group A	% Improvement in group B
1	*Vedana* (Pain)	82.82%	90.37%
2	*Srava* (Discharge)	70.32%	82.66%
3	Number of *Pidaka*	73.81%	77.14%
4	*Vivarnata* (Discoloration)	63.95%	60.38%

V. DISCUSSION

For a product to be effective in the management of *mukhadhooshika,* it is expected to have certain basic qualities. *Mukhadhooshika* is generally due to vitiation of *vata, kapha* and *rakta*. However, due to *ashraya-ashrayi bhava* and the symptoms like *paka, pitta* has an important role to play. Owing to its *madura-kashaya rasa and madura vipaka* along with *Laghu* and *Snigdha Guna*, the drug helps in pacifying and *Pitta* and *vata dosha*, which are primarily involved in the pathogenesis of symptoms such as *Srava, Pidaka,* and *Vedana*. Its *Shothahara* (anti-inflammatory)[9] ,*Vedanasthapana*(analgesic) and anti-oxidant[10] actions aid in reducing inflammation and pain, leading to significant relief in *Vedana*. The *Kashaya Rasa* and *Ruksha Guna* of Shalmalikantaka help in controlling excessive secretions, thereby reducing *Srava*. Its *Krimighna* (anti helminthic)[11] and *Rakta Shodhaka* properties assist in cleansing the affected tissues, limiting the formation of new *Pidaka* and promoting healing of existing lesions. Furthermore, *Shalmalikantaka* exhibits *Twak Prasadana* and *Rakta Prasadana* effects, which may explain its comparatively better role in improving *Vivarnata* by enhancing skin complexion and normalizing pigmentation. The drug's overall action on *Rakta Dhatu* and *Twak* supports restoration of normal skin texture and colour. Thus, through its *Dosha Shamaka, Shothahara, Rakta Shodhaka,* and *Twak Prasadana* properties, Shalmalikantaka arka and its gel form effectively addresses the underlying pathology and contributes to significant clinical improvement.

VI. CONCLUSION

When the probable mode of action is considered, *Shalmalikantaka arka* and its modified gel form possesses anti acne activity which may be due to the various mode of actions like anti-inflammatory, analgesic, wound healing, anti-microbial and anti-oxidant etc. Furthermore, *Shalmalikantaka* exhibits *Twak Prasadana* and *Rakta Prasadana* effects, which will enhance the skin complexion and normalizing pigmentation. In clinical study evaluation while comparing the two groups, there is no significant difference in all assessment criteria. Both the groups were statistically significant. While considering the present-day scenario, the *Shalmalikantaka arka* gel will be the better choice because of its user-friendly nature. *Shalmalikantaka arka* and *Shalmalikantaka arka* gel both are equally effective in the treatment of *Mukhadhooshika* W.S.R to Acne vulgaris is accepted.

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