

Clinical Evaluation of *Guduchyadi Kwath* in the Management of *Ekakustha* with special reference to Psoriasis: A Randomized Controlled Trial

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Abstract

Introduction: Psoriasis is a widespread, chronically recurrent papulosquamous illness characterized by varying sized silvery-white, scaly patches most typically observed on the elbow, knees, and scalp but ultimately covering the entire body. The most prevalent consequences in psoriasis patients include cardiovascular disease (CVD), Crohn's disease, chronic obstructive pulmonary disease (COPD), cancer, depression, and metabolic syndrome. Ayurvedic drugs need to be studied for their clinical efficacy and safety in skin diseases with high burden in society.

Aim and Objectives: To compare the efficacy of *Guduchyadi Kwath* in the management of *Ekakustha* w.s.r. to Psoriasis with a controlled group of modern medicine (Tablet Methotrexate, Tablet Folic Acid & Psorinol ointment). **Material and Methods:** 32 patients of psoriasis were randomly divided into two groups. In Group A, 16 patients were administered *Guduchyadi Kwath* whereas in group B, 16 patients were given Methotrexate tablet, Folic acid tablet and Psorinol ointment for 28 days. **Results:** 30 patients completed the study and both interventions were found effective and led to significant reductions in Psoriasis Area and Severity Index Score (PASI Score), Hamilton Depression Rating Scale (HDRS), *Asvedana* (Loss of perspiration), *Mahavastu* (Extent of lesion), *Matsyashakalopama* (Scaling), *Krishna Aruna Varna* (Discoloration), *Kandu* (Itching) and *Rukshata* (Dryness) after 28 days of therapy. **Conclusion:** Standard control drug (Tablet Methotrexate) exhibited better results

compared to *Guduchyadi Kwath* (Trial drug) in improving the primary as well as secondary outcome measures.

Keywords: Psoriasis, *Ekakustha*, *Guduchyadi Kwath*, Methotrexate, *Ayurveda*

Introduction

Ekakustha is a kind of *Kustha Roga* with *Vata-Kapha* dominance and vitiation of *Rakta*, *Tvak*, *Rasa*, *Lasika*, and *Mamsa*.^[1] Psoriasis was chosen as the *Ekakustha* in this study because it is more comparable to psoriasis than any other type of skin diseases. *Ekakustha* is a type of *Kshudra Kustha* with *Vata* and *Kapha Dosha* dominance. It is distinguished by symptoms such as *Asvedana* (lack of sweat on the afflicted site of skin), *Mahavastu* (chronic and long-lasting nature/covered wide region of skin), and *Matsyashakalopama* (fish like shiny lesion on skin). These symptoms are comparable to those of psoriasis.^[2] Psoriasis is a widespread, chronically recurrent papulosquamous illness characterized by varying sized silvery-white, scaly patches most typically observed on the elbow, knees, and scalp but ultimately covering the entire body.

Ayurvedic *Panchkarma* procedures especially *Vamana*, *Virechana* and *Niruha Basti* give good result in *Ekakustha* (Psoriasis) which requires more than four weeks period of hospitalization. *Guduchyadi Kwath* is a polyherbal Ayurvedic formulation useful in various diseases. It has anti-inflammatory and immuno-modulatory properties that's why it is useful in reducing inflammation and arresting microbial growth. *Guduchyadi Kwath* detoxifies body and purifies blood and thus helps in various skin diseases. According to Ayurveda it pacifies mainly *Pitta Dosha*, then *Kapha* and *Vata*. It acts on *Rasa*, *Rakta* and *Meda Dhatu* mainly. Hence, this formulation has been selected for trial overcome to shortcomings of the contemporary treatment of *Ekakustha* (Psoriasis).

Materials and Methods

Ethical consideration:

Study was approved by Institutional ethics committee (IEC/ACA/2021/02-40) and was registered prospectively in the clinical trial registry of India vide registration number CTRI/2022/06/043098.

Selection of cases:

The study was conducted on 30 clinically diagnosed patients of *Ekakustha* (Psoriasis) fulfilling the inclusion criteria were selected from National Institute of Ayurveda Hospital, Jaipur.

Inclusion Criteria:

- Patients between the age group 18-60 years of age
- Patients of either sex
- Patients having clinical signs & symptoms of *Ekakustha* (Psoriasis)
- Patients having chronicity less than five years

Exclusion Criteria:

- Patients with long-term history of steroid and cytotoxic treatment
- Patients having concomitant illness like uncontrolled Hypertension, Diabetes Mellitus, HIV, Malignancy, etc.
- Patients having other associated skin disease like eczema, secondary bacterial infection, etc.
- Patient participated in any clinical trial with in last six months
- Pregnant or lactating women

Sample size: Sample size of 15 (In each group) was selected for the present study.

Randomization

Randomization was done using computer generated randomization method. Randomization plan was generated on www.randomization.com in which 32 patients were randomized into 8 blocks. Randomization plan can be replicated using seed number 1118.

Blinding and Allocation concealment

It was an open label study and no blinding was done. Allocation concealment was done with the help of sequentially numbered, opaque, sealed envelopes. Randomization sequence generated was sealed in opaque envelopes by an independent person not involved in the study. The envelopes were then sequentially numbered and cases were enrolled following the number.

Consent of patients: All the patients selected for the trial have explained the nature of the study, and their consent was obtained on the pro forma before inclusion in the study.

Grouping

32 clinically diagnosed patients of *Ekakustha* fulfilling the inclusion criteria were divided randomly in two groups (Group A & Group B). 16 patients were included in each group.

Group A: 16 clinically diagnosed patients of *Ekakustha* (Psoriasis) were treated with *Guduchyadi Kwath*.

Group B: 16 clinically diagnosed patients of *Ekakustha* (Psoriasis) were treated with Methotrexate tablet, Folic acid tablet and Psorinol ointment.

Table 1: Quantity of ingredients taken for preparation of *Guduchyadi Kwath*³:

S. No.	Dravya	Botanical Name	Part used	Quantity
1.	Guduchi	<i>Tinospora cordifolia</i> Thunb.	Stem	1 part
2.	Haritaki	<i>Terminalia chebula</i> Retz.	Fruit	1 part
3.	Amalaki	<i>Emblica officinalis</i> Linn.	Fruit	1 part

4.	<i>Vibhitaki</i>	<i>Terminalia bellirica</i> Roxb.	Fruit	1 part
5.	<i>Daruharidra</i>	<i>Berberis aristata</i> DC.	Root	1 part
6.	<i>Guggulu</i>	<i>Commiphora mukul</i> Arn.	Resin	¼ Part

Administration of trial drug:

Guduchyadi Kwath (Panartha)

- Dose: 20 gm
- Route of administration: Oral
- Time of administration: Twice a day, Before meals
- Duration: 28 days

Guduchyadi Kwath (Snanartha)

- Dose: 40 gm
- Route of administration: External application (Bath)
- Time of administration: Once in a day
- Duration: 28 days
- Methodology: 40 gm *Yavakuta* was boiled with 64 times of water under low heat and reduced to ½ and filtered it. Remaining amount of *Kwath* diluted with 1 bucket of water (approximately 8 litre of bucket water) and used for bath.

Tablet Methotrexate

- Dose: 10 mg
- Route of administration: Oral
- Time of administration: Once a week, After meals
- Duration: 28 days

Tablet Folic acid

- Dose: 5 mg
- Route of administration: Oral
- Time of administration: Once a day, After meals
- Duration: 28 days

Psorinol Ointment

- Dose: As per requirement
- Route of administration: External application
- Time of administration: Once a day
- Duration: 28 days

Outcomes

Primary Outcome: Changes in Psoriasis Area and Severity Index Score (PASI Score)

Secondary Outcome: Changes in the Hamilton Depression Rating Scale (HDRS) and clinical symptoms of *Ekakustha* (Psoriasis)

Criteria for assessment

Subjective criteria:

- *Asvedana* (Loss of perspiration)
- *Mahavastu* (Extent of lesion)
- *Matsyashakalopama* (Scaling)
- *Kṛishṇa Aruṇa Varṇa* (Discoloration)
- *Kandu* (Itching)
- *Rukṣhata* (Dryness)

Objective criteria:

- 1. Psoriasis Area and Severity Index (PASI) Score**
- 2. Hamilton Depression Rating Scale (HDRS)**

Laboratory Investigation: The following investigations were done on 0th day and end of the trial for proper diagnosis and to rule out major pathological conditions:

- **Hemogram:** CBC, ESR
- **Biochemical parameters:** Fasting Blood Sugar (FBS)
- **Renal Function Test:** Blood urea, Sr. Creatinine
- **Liver Function Test:** AST, ALT
- **Urine examination:** Routine, Microscopic

Routine examination and assessment:

The full details of history & physical examination of patient were recorded as per the proforma. Clinical & physiological assessment was done before treatment, during treatment & at the end of the treatment and results were analyzed with appropriate statistical tests.

Statistical Analysis:

Statistical analysis was performed using statistical software GraphPad Instat trial version 3.10. For intragroup comparison of non-parametric data, Wilcoxon matched-pairs signed rank test was employed whereas intergroup comparison for non-parametric data was done using Mann Whitney U test. Paired t-test was used for intragroup comparison of parametric data, whereas Unpaired t-test was used for intergroup comparison.

The results were considered significant or insignificant depending upon the value of P. (Significant - $P < 0.05$ & Non-significant - $P > 0.05$).

Observations and Results

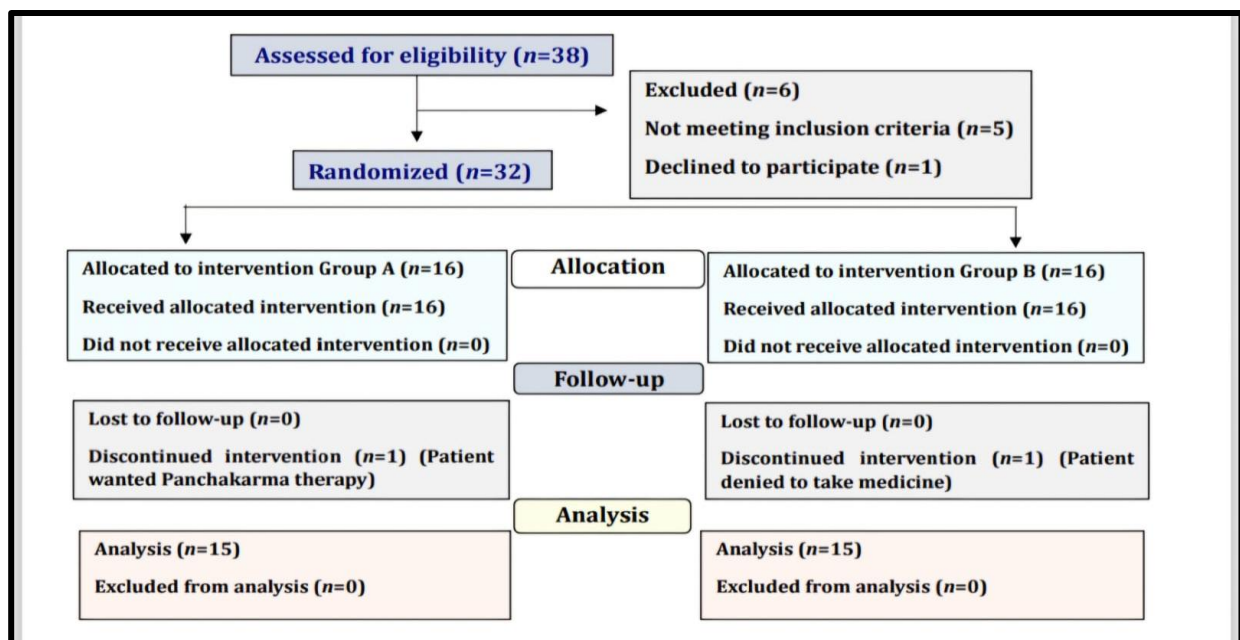


Chart 1: CONSORT flow diagram

Assessment of therapy: Among 32 patients registered for a present clinical trial, 30 patients completed the total trial duration, while 02 patients dropped out during the study. Hence result had been calculated from 30 patients.

Table 2: Effect of Therapy on Qualitative Variable (Wilcoxon Matched-Pairs Signed Rank Test)

Variable	Gr.	N	Mean Score		Mean Diff.	% Change	SD±	SE±	p Value	W Value	R
			BT	AT							
<i>Asvedana</i> (Loss of perspiration)	A	15	2.73	2.67	0.07	2.44	0.26	0.07	>0.9999	1.00	NS
	B	15	1.47	1.07	0.40	27.27	0.51	0.13	0.0313	21.00	S
<i>Mahavastu</i> (Extent of lesion)	A	15	2.73	2.07	0.67	24.39	0.82	0.21	0.0156	28.00	S
	B	15	1.73	1.00	0.73	42.31	0.59	0.15	0.0020	55.00	S
<i>Matsyashakalopama</i> (Scaling)	A	15	2.47	1.87	0.60	24.32	0.63	0.16	0.0078	36.00	S
	B	15	1.60	0.33	1.27	79.17	0.46	0.12	<0.0001	120.00	S
<i>Krisna Aruna Varna</i> (Discolouration)	A	15	2.20	1.53	0.67	30.30	0.62	0.16	0.0039	45.00	S
	B	15	1.67	0.33	1.33	80.00	0.49	0.13	<0.0001	120.00	S
<i>Kandu</i> (Itching)	A	15	1.67	1.00	0.67	40.00	0.62	0.16	0.0039	45.00	S
	B	15	1.73	0.13	1.60	92.31	0.51	0.13	<0.0001	120.00	S
<i>Rukshata</i> (Dryness)	A	15	2.20	1.53	0.67	30.30	0.49	0.13	0.0020	55.00	S
	B	15	2.00	0.60	1.40	70.00	0.51	0.13	<0.0001	120.00	S
PASI Score	A	15	8.29	3.57	4.72	56.93	4.56	1.18	<0.0001	120.00	S
	B	15	14.07	3.06	11.01	78.27	8.85	2.28	<0.0001	120.00	S
HDRS	A	15	8.93	6.33	2.60	29.21%	3.22	0.83	0.0078	36.00	S
	B	15	10.20	5.80	4.40	43.14%	4.90	1.26	0.0039	45.00	S

(PASI Score – Psoriasis Area & Severity Index Score; HDRS – Hamilton Depression Rating Scale; Gr: Group; N: Number of patients; BT: Before Treatment; AT: After Treatment; %: Percentage; S.D: Standard Deviation; SE: Standard Error; R: Result; NS: Not Significant; S: Significant)

Table 3: Inter-Group Comparisons in Qualitative Variables (Mann-Whitney Test)

Variable	Gr.	N	Mean Diff.	SD±	SE±	U' Value	P Value	R
<i>Asvedana</i> (Loss of perspiration)	A	15	0.07	0.26	0.07	150.00	0.0363	S
	B	15	0.40	0.51	0.13			
<i>Mahavastu</i> (Extent of lesion)	A	15	0.67	0.82	0.21	123.50	0.6338	NS

	B	15	0.73	0.59	0.15			
Matsyashakalopama (Scaling)	A	15	0.60	0.63	0.16	173.50	0.0042	S
	B	15	1.27	0.46	0.12			
Krishna Aruna Varna (Discolouration)	A	15	0.67	0.62	0.16	172.50	0.0049	S
	B	15	1.33	0.49	0.13			
Kandu (Itching)	A	15	0.67	0.62	0.15	190.50	0.005	S
	B	15	1.6	0.51	0.13			
Rukshata (Dryness)	A	15	0.67	0.49	0.12	180.0	0.0012	S
	B	15	1.4	0.50	0.13			
PASI Score	A	15	4.720	4.56	1.18	172.50	0.0136	S
	B	15	11.010	8.85	2.28			
HDRS	A	15	2.60	3.22	0.83	132.00	0.4104	S
	B	15	4.40	4.90	1.26			

(PASI Score – Psoriasis Area & Severity Index Score; HDRS – Hamilton Depression Rating Scale; Gr: Group; N: Number of patients; BT: Before Treatment; AT: After Treatment; %: Percentage; S.D: Standard Deviation; SE: Standard Error; U': Mann- Whitney Value; R: Result; NS: Not Significant; S: Significant)

On inter-group comparison, we noted statistically significant results in *Asvedana*, *Matsyashakalopama*, *Krishna Aruna Varna*, *Kandu*, *Rukshata*, PASI Score and HDRS ($P < 0.05$). *Mahavastu* had non-significant changes ($P > 0.05$).

Table 4: Summary of group wise percentage change in qualitative variables

S. No.	Variable	Change in Percentage	
		Group A	Group B
1.	<i>Asvedana</i>	2.44	27.27
2.	<i>Mahavastu</i>	24.39	42.31
3.	<i>Matsyashakalopama</i>	24.32	79.17
4.	<i>Krishna Aruna Varna</i>	30.30	80.00

5.	<i>Kandu</i>	40.00	92.31
6.	<i>Rukshata</i>	30.30	70.00
7.	PASI Score	56.93	78.27
8.	HDRS	29.21	43.14

Table describes the overall percentage wise improvement in qualitative variable in both groups.

Discussions

Present randomized, single center, open label, prospective study entitled “Clinical Evaluation of *Guduchyadi Kwath* in the Management of *Ekakustha* w.s.r. to Psoriasis: A Randomized Controlled Trial” was conducted with the objective of comparing the efficacy of *Guduchyadi Kwath* and standard controlled Tablet Methotrexate, in Psoriasis. 32 patients (16 in group A and 16 in group B) of Psoriasis, were randomized using computer generated randomization method. 2 patients were dropped out from the study (1 in group A and 1 in group B). Effect of therapy in this study provided valuable insights and will be discussed further.

Effect of interventions on qualitative variables (Signs and Symptoms related to *Ekakustha*)

Psoriasis Area and Severity Index Score (PASI Score):

The PASI Score was the main criteria for assessment in patients with psoriasis, as it includes all three cardinal signs, i.e., erythema, induration, and desquamation. In this study, group A improved its PASI Score by 56.93% ($P < 0.0001$) compared to group B, which improved by 78.27% ($P < 0.0001$), and the difference was statistically significant in both groups. The intergroup comparison shows a significant result (p value is 0.0136), which states that there is a significant difference between the efficacy of trial drugs of both groups in PASI Score. In terms of percent improvement, Group B showed better results than Group A.

Hamilton Depression Rating Scale (HDRS):

The HDRS typically consists of 17 to 21 items or questions that cover various aspects of depressive symptoms, including mood, feelings of guilt and suicide, sleep disturbances, appetite changes, and physical symptoms. Each item is scored based on the patient's responses, with higher scores indicating more severe depressive symptoms. Result of the group A & group B found statistically significant. Total mean score before treatment was 8.93, which reduced as 6.33 after the completion of treatment in group A. Total mean score before starting the treatment in group B was 10.20 which was reduced as 5.80 after the treatment. *Guduchi* is a component of *Medhya Rasayana*, has *Tikta*, *Kashaya Rasa* which help in keeping the mind alert. The root extract of *Tinospora cordifolia* was found to possess normalizing

activity against stress-induced changes in norepinephrine, dopamine, 5-hydroxytryptamine, and 5hydroxyindoleacetic acid levels.

Asvedana:

Asvedana is due to obstruction in *Svedavaha srotas* might be a probable reason. Here *Vata dosha* can cause *Stambhana*. Medicines of group A had *Tridoshashamaka* property which may responsible for the reduction of symptom. However, more results were found in group B.

Mahavastu:

Shighrakari guna of *Vata dosha* is responsible for spreading of lesions of the body surface. In *Kustha* disease generally all the three *dosha* are involved. Medicines used in group A having *Tridoshashara* property, so there is marked improvement found in group A, but more percentage relief is found in group B.

Matsyashakalopama:

Matsyashakalopama may compared with hyper keratinization, it is due to vitiation of *Vata Kapha dosha*. *Vata* increases rate of cell division and *Kapha* produces smooth scales. *Tinospora cordifolia* harbours bioactive constituents capable of orchestrating immune homeostasis, thereby exhibiting the potential to ameliorate the epidermal hyperproliferation witnessed in psoriatic lesions. which may helpful to reduce the symptoms in group A.

Kandu:

Kandu is a cardinal feature of *Kapha Dosha*. The majority of trial drugs contain *Tikta, Katu, Kashya Rasa, Ushna Veerya* and *Kandughna* properties that act directly on *Kapha Dosha*. *Daruharidra* has an anti-pruritic effect that works directly on *Kandu*.

Rukshata:

Rukshata is a cardinal feature of *Vata Dosha*. *Haritaki and Amalaki* have *Madhura Vipaka* which pacify *Vata Dosha*. Mostly trial drugs have *Ushna Virya* which also pacify *Vata Dosha*.

Probable mode of action of trial interventions based on Ayurvedic principles

Guduchyadi Kwath: *Guduchyadi Kwath*, described by *Yogaratanakara*. *Guduchyadi Kwath* includes 6 ingredients, namely: *Guduchi, Haritaki, Vibhitaki, Amalaki, Daruharidra*, and *Guggulu*.

1) Effect on Dosha -

- About 83.33% of total drugs of *Guduchyadi Kwath* have *Tikta-Kashaya Rasa* and 50% of total drugs have *Katu Rasa* dominancy which are *Kaphashamaka*.
- About 83.33% of total drugs have *Ushna Veerya* and 66.66% of total drugs have *Katu Vipaka* which is also *Kaphahara*.

- According to *Dosha Shamana* property, 50% of total drugs have *Tridoshaghna* property, 33.33% of total drugs have *Kaphapittahara* property, 16.33% of total drugs have *Pittakaphahara* and *Kaphavatahara* property. Taking into account the qualities of *Guduchyadi Kwath*, symptomatic relief in *Kandu* and *Rukshata* was achieved. So, this medicine is effective on *Tridoshaja Vyadhi*.

2) Effect on *Dushya* –

- About 83.33% of total drugs of *Guduchyadi Kwath* have *Ruksha Guna* and 66.66% of total drugs have *Laghu Guna* through which it would have acted as *Kaphashamaka*, 16.66% of total drugs have *Vishada Guna* that acts by reducing *Pichhila Guna* of *Kapha*. *Tikshna Guna* was about 16.66% of total drugs, which helped in eradicating disease from deeper *Dhatu* and 16.33% of total drugs have *Sheeta Guna*. Thus, it could have helped in *Dahaprashamana*. 33.33% of total drugs have *Guru Guna* which would have a counter-productive function keeping in mind the *Kaphaja* nature of the diseases.
- 66.66% of total drugs in *Guduchyadi Kwath* are having *Madhura Vipaka* and 33.33% of total drugs have *Katu Vipaka* and by this mechanism it is having more of *Kaphavardhaka* property than the *Kaphashamaka* property. This formulation also contains *Triphala* which acts as *Pitta Virechaka* and *Rakta Shodhaka*.
- In this *Kwath*, 83.33% of total drugs have *Tikta-Kashaya Rasa* and 50% of total drugs have *Katu Rasa* which do *Lekhana* of *Pravridhha Mamsa Dhatu*.

3) Effect on *Srotas* –

- In this formulation, many components have a quality of *Srotomukha Sodhana* so they removed *Sanga* type of *Srotodushti* and purifies the channels.

4) Effect on *Aama*-

- Most of drugs are *Dipana*, *Pachana*, *Laghu*, *Ruksha* and *Tikshna* properties which are helpful in removing the free radicals and enhance the *Aamapachana* process.

5) Effect on *Vyadhi* -

- Many drugs are *Kusthaghna* and *Kandughna*, so, they have effect on *Ekakustha* symptoms and aetiology.
- *Krimi* is mentioned as causative factors of *Kustha*. So, *Krimighna Dravya* of this medicine has effect on *Krimi*.
- Most of drugs are *Katu-Tikta-Kashaya Rasa*, *Laghu*, *Ruksha* and *Tikshna Guna* in nature. So, they have effect on *Ekakustha*.
- In *Guduchyadi Kwath* few drugs i.e., *Haritaki*, *Amalaki*, *Guduchi* are considered

Rasayana, thus opening channels and performing *Dhatuposhana*. *Haridra* is considered a very potent Anti-inflammatory and *Guggulu* has anti-inflammatory as well as *Lekhana Karma*. *Guduchi* through its *Medhya* property helps in relieving psychosomatic component of the disease as well being an Immunomodulatory. It helps in remission and symptomatic relief in a subject.

Probable contemporary mode of action of trial interventions

Guduchi: *Tinospora cordifolia*'s immunomodulatory attributes offer a salient rationale for its evaluation in psoriasis management. This dermatological ailment is conspicuously underpinned by an aberrant immune response, notably involving T-cell dysregulation.

Furthermore, *Tinospora cordifolia*'s status as an antioxidant reservoir holds pertinence in the psoriasis context. Oxidative stress is posited as a contributory factor in psoriasis aetiology and exacerbation. The antioxidative attributes of *Tinospora cordifolia* confer the ability to quench injurious free radicals, thus potentially mitigating cutaneous oxidative stress and, by extension, offering therapeutic utility in psoriasis management.

Triphala: Contains tannins, terpenoids, and phenolic compounds. These components possess anti-inflammatory and immunomodulatory properties, which are pertinent to counteract the inflammatory responses associated with psoriasis.

Daruharidra: Berberine: Berberine is one of the key bioactive alkaloids found in *Berberis aristata*. Berberine exhibits anti-inflammatory properties by inhibiting the activity of proinflammatory molecules, such as interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNF-

α). In psoriasis, these cytokines are overproduced, contributing to inflammation and skin lesions.

Guggulu: Contains guggulsterones, particularly E and Z guggulsterones. These compounds have demonstrated anti-inflammatory properties. In psoriasis, inflammation is a key driver of skin lesions. Guggulsterones' anti-inflammatory effects may help reduce redness, itching, and the formation of psoriatic plaques.

Conclusions

Aim of the present study was to compare the efficacy of *Guduchyadi Kwath* in the management of *Ekakustha* w.s.r. to Psoriasis with a controlled group of modern medicine (Tablet Methotrexate, Tablet Folic Acid & Psorinol ointment).

Based on the results, it was found that both *Guduchyadi Kwath* (Trial drug) and tablet methotrexate (Standard control drug) were effective in lowering sign and symptoms in patients with Psoriasis. However, standard control drug (Tablet Methotrexate) found more

effective in improving maximum parameters than Ayurveda treatment.

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Conflicts of interest

There are no conflicts of interest.

References

¹R.K. Sharma and B. Dash, Agnivesha's Charaka Samhita, Text with English Translation, Volume 3 chikitsa sthana, chapter 7-verse 9-10, Chowkhamba Sanskrit series office, Varanasi, India, 4th edition 2000, pp. 320.

²R.K. Sharma and B. Dash, Agnivesha's Charaka Samhita, Text with English Translation, Volume 3 chikitsa sthana, chapter 7-verse 9-10, Chowkhamba Sanskrit series office, Varanasi, India, 4th edition 2000, pp. 324-325.

³ Vaidya Lakshmipati Sastri, Yogaratnakara with Vidyotini Hindi Commentary, Chaukhamba Prakashan Varanasi edition: reprinted, 2018, Uttaraardha, Kustha Nidana, Page no: 211