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Management of *Ekakushta* vis-à-vis Chronic Plaque Psoriasis with *Guduchi Kwatha* and *Karanja Taila* - A Clinical Study

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ABSTRACT

The prevalence of skin diseases in general population has varied from 7.86% to 11.16% in various studies. All the skin diseases in *Ayurveda* have been discussed under the umbrella of "*Kushta*". *Kushta* is further divided into *Mahakushta* and *Kshudrakushta*. *Ekakushta* is considered as one among the *Kshudrakushta* and it is *Vata-Kapha Pradhana Vyadhi* having *Lakshana* like *Aswedana*, *Mahavastu* and *Matsya Shakalavat Twacha*. Psoriasis is one of the most intriguing and perplexing disorder of skin. It is a papulosquamous disorder of the skin, characterised by sharply defined erythematous plaque lesions. It is notoriously chronic and is well known for its cause or remission and exacerbation. Even though it is considered as an autoimmune disorder affecting the skin, it cannot always be treated as a somatic lesion, it is in fact multifactorial in origin and conditioned by various constitutional and environmental factors. A survey conducted by the National Psoriasis Foundation reports that, almost 75% of patients believe that psoriasis had moderate to large negative impact on their quality of life (QOL) with alterations in their daily activities. *Guduchi Kwatha* along with *Karanja Taila* which is specifically mentioned in *Kushta Chikitsa*, taken as intervention after the *Virechana Karma.*

Key words: *Mahakushta, Kshudrakusta, Ekakushta, Virechana, Psoriasis.*

INTRODUCTION

A person afflicted with psoriasis will suffer from social stigma, pain, discomfort, physical disability and psychological distress. Currently, the treatment modalities available for the management of psoriasis include topical steroid therapy, corticosteroids and photochemothrapy. Long term usage of topical glucocorticoids is often accompanied by loss of effectiveness and atrophy of the skin. Most of the treatment modalities have some limitations as they are only palliative. Hence psoriasis still remains a challenge for the management in contemporary system of medicine.

Considering the above reasons, it is relevant to search for an alternative management, which is effective and which gives long term remission.

Various *Shodhana* and *Shaman Chikitsa* have been mentioned in the *Ayurvedic* classics for the management of *Kushta*. So, to disintegrate the *Samprapti* and to increase the duration between relapse, a formulation which has not only *Kushtaghna* effect but which also works at the level of *Dhatvagni* countering *Kapha* and *Vata Dosha* is desirable. Hence the current study is taken up to assess and compare the

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clinical efficacy of *Guduchi Kwatha* after *Samsarjana Karma* of *Virechana* in the management of *Ekakushta* vis-à-vis chronic plaque psoriasis.

In the present study 20 cases of *Ekakushta* vis-à-vis chronic plaque psoriasis were registered.

OBJECTIVE OF STUDY

To evaluate the efficacy of *Guduchi Kwatha* and *Karanja Beeja Taila* after *virechana* in *Ekakushta* vis-à-vis chronic plaque psoriasis.

MATERIALS AND METHODS

Materials

The Materials used in the study were:

- *Guduchi Kwatha*[1] - contains only *Guduchi*
- *Karanja Beeja Taila*[2] - contains only *Karanja Beeja*.

Source of drugs and method of preparation

Guduchi Kwatha was procured from a GMP certified S N pandit and son's pharmacy**.** *Karanja Beeja Taila* was procured for the study from SN Pandit and sons Pharmacy (GMP Certified Unit), Shankar Matt, Main Road, Opposite to Nataraja Choultry, Mysuru.

Methods

Source of the data

Subjects were selected from the OPD and IPD of Government Ayurveda Medical College and Hospital, Mysuru and Government Hi-Tech Panchakarma Hospital - a teaching hospital, Mysuru and special was also conducted for the study.

Sample size

The study was completed on 20 subjects of *Ekakushta* vis-à-vis chronic plaque psoriasis. The selected subject's detailed profile was prepared as per the proforma designed for the study.

Sampling method

It was an interventional study with pre, mid and post-test design.

Inclusion criteria

1. Subjects of all gender, between the age group of 18-60 years with the signs and symptoms of *Ekakushta* vis-à-vis chronic plaque psoriasis were selected for the study.
2. Both fresh cases and treated cases were included.

A. Fresh cases include freshly detected and untreated cases of *Ekakushta* vis-a-vis chronic plaque psoriasis.

B. Treated cases include already diagnosed as *Ekakushta* vis-a-vis chronic plaque psoriasis, who had voluntarily discontinued the treatment with the flush out period of 7 days.

Exclusion criteria

1. Subjects with K/C/O Diabetes mellitus (RBS->200mg/dl), K/C/O Hypertension(uncontrolled), Ischemic heart diseases and immune compromised subjects were excluded.
2. Subjects suffering from any other systemic disorder which may interfere with the intervention were excluded.
3. Pregnant and lactating women were excluded.
4. Chronic plaque psoriasis where in lesions with secondary severe infections was excluded.

Diagnostic Criteria

Diagnosis was made based on the *Lakshana* of *Ekakushta* and signs and symptoms of Chronic plaque psoriasis.

Lakshana of *ekakushta* are[3]

- *Aswedana* (absence of perspiration, always dry in nature)
- *Mahavastu* (large area involved, coin to palm shaped)
- *Matsyashakalavat Twacha* (silvery scales)
- *Krishna Aruna Varna Mandalas* (black or reddish brown skin lesions)
- *Abhraka Patra Sadrusha Twacha* (scales resembling mica)

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Symptoms of Chronic plaque psoriasis

- Dry, raised, red skin lesions (plaques) covered with silvery scales.
- Positive Auspitz sign.
- Positive Candle grease sign
- Positive Koebener phenomenon

Assessment criteria

To assess the effect of therapy, the Psoriasis Area and Severity Index score (PASI) scoring method was adopted.

PASI scoring was calculated before starting, during and after completion of the intervention and total percentage of improvement in "PASI" scoring was calculated to assess the effect of the treatment on this parameter. Data was analysed by using contingency co-efficient table analysis. The assessment was done on the basis of severity of Itching, Erythema, Scaling and thickness in the affected area.

Table 1: Showing diseased skin grading

Coverage	Score
0	0
<10%	1
10-29%	2
30-49%	3
50-69%	4
70-89%	5
90-100%	6

The severity was measured by four different Parameters i.e., Itching, Erythema, Scaling and Thickness. Again, all these were measured separately for each skin section.

These were measured on a scale of 0 - 4, from none to maximum according to the following chart:

Table 2: Showing Severity Score

Severity	None	Mild	Moderate	Severe	Very severe
Score	0	1	2	3	4

After figuring out all the scores, final "PASI" was calculated. Thus, PASI scoring was calculated before starting the intervention, after *Samsarjana Krama* and after the completion of the intervention and overall percentage in "P.A.S.I" scoring was calculated to assess the effect of the Intervention.

Overall assessment of clinical response

Complete remission - PASI score 0 after treatment.

Marked improvement - Reduction in PASI score >75%

Moderate improvement - Reduction in PASI score between 75% and 50%.

Minimal improvement - Reduction in PASI score <50%

Unchanged - No reduction in PASI score.

Assessment Schedule

- Pre-test assessment was done before administering *Virechana.*
- Mid test assessment was done before administering *Shamanoushadhi*.
- Post-test assessment was done after the completion of intervention (on 30th day)

Investigation

Necessary investigations were conducted in required cases to rule out other systemic diseases or complications.

Intervention

The interventions were as follows:

All the subjects were administered with *Virechana Karma* before starting the intervention as a pre requisite.

Shamanaushadhi was started after completion of *Samsarjana Karma;*

Guduchi Kwatha - 100 ml in two equally divided doses (50ml twice daily) was administered during morning and evening before food with the equal quantity of lukewarm water for 30 consecutive days.

Along with this *Karanja Beeja Taila* was used as an external application twice daily for 30 days.

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Statistical Methods

The result was compared and analyzed statistically by using the following statistical methods:

- **Descriptive Statistics -** Mean, Standard deviation, Frequency, Percent.
- **Inferential testing**
  1. Chi-square test
  2. Repeated measures ANOVA
  3. Contingency coefficient

All the statistical methods will be done using SPSS for windows.

Observation and Results

21 subjects were registered for the study. Among them one subject was dropped out during the course of intervention. The study was completed in 20 subjects and observations are as follows;

Among 20 subjects, 1 subject belonged to age group of 18-30 years, 9 subjects were in 31-40 years of age group and 4 subjects belonged to 41-50 years of age group and 7 subjects were in between 50-60 years of age, 18 subjects were male and 3 subjects were females.

2 subjects were daily wage workers, 1 subject was student, 3 subjects were working in various factories, 2 subjects were homemakers, 6 subjects were farmers and 7 subjects were business men. Among 20 subjects, 2 had the chronicity less than 1 year, 16 subjects had the chronicity of 1-5 years, 3 subjects had the chronicity of 6-10 years. Among 20 subjects, 4 subjects were fresh cases and 17 subjects were treated by some other medications. Among 20 subjects, 2 subjects had family history of psoriasis and 19 subjects did not have any family history.

Results

Data was collected before *Virechana*, after *Virechana* and after completion of intervention. These were analyzed by using contingency- coefficient table analysis. Repeated measure ANOVA, descriptive statistics using SSPS and overall assessment with the help of chi-square test. In this study, the results were analyzed using PASI score in which the assessment was done on the basis of skin affected in each area by itching, erythema, scaling and thickness.

Total PASI of Head Region

Before *Virechana*, mean was 1.3750 with SD of 1.5586, after *Virechana* mean was 0.6600 with SD of 0.7351 and after the intervention, mean was 0.3650 with SD of 0.4145. Thus, the result of Total PASI of head is highly significant with the P value 0.000

Table 4: Total PASI of head region

PASI of head region	Before *Virechana*		After *Virechana*		After *Shamanaushadhi*	
	Mean	S.D	Mean	S.D	Mean	S.D
Group	1.3750	1.55863	.6600	.73513	.3650	.41457

Source	DF	Mean square	F	Sig
Change	2	16.672	41.760	.000

Total PASI of Upper Extremities

Before *Virechana*, mean was 8.0800 with SD of 3.03690, after *Virechana* mean was 4.5100 with SD of 2.2171 and after the intervention, mean was 2.2000 with SD of 1.67458.

Thus, the result of Total PASI of Upper Extremities is highly significant with the P value 0.000

Table 5: Total PASI of upper extremities

PASI of upper extremities	Before *Virechana*		After *Virechana*		After *Shamanaushadhi*	
	Mean	S.D	Mean	S.D	Mean	S.D
Group	8.0800	3.03690	4.5100	2.21713	2.2000	1.67458

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Source	DF	Mean square	F	Sig
Change	2	407.494	169.465	.000

Total PASI of Trunk

Before *Virechana*, mean was 8.3650 with SD of 6.44330, after *Virechana* mean was 3.9600 with SD of 3.34576 and after the intervention, mean was 2.2800 with SD of 2.19895.

Thus, the result of Total PASI of Trunk is highly significant with the P value 0.000

Table 6: Total PASI of trunk region

PASI of trunk region	Before *Virechana*		After *Virechana*		After *Shamanaushadhi*	
	Mean	S.D	Mean	S.D	Mean	S.D
Group	8.3650	6.44330	3.9600	3.34576	2.2800	2.19895

Source	DF	Mean square	F	Sig
Change	1	3053.234	63.087	.000

Total PASI of Lower Extremities

Before *Virechana*, mean was 19.2000 with SD of 7.76931, after *Virechana* mean was 13.2800 with SD of 6.16626 and after the intervention, mean was 10.5000 with SD of 5.18764.

Thus, the result of Total PASI of Lower Extremities is highly significant with the P value 0.001

Table 7: Total PASI of lower extremities region

PASI of lower extremities	Before *Virechana*		After *Virechana*		After *Shamanaushadhi*	
	Mean	S.D	Mean	S.D	Mean	S.D
Group	19.2000	7.76931	13.2800	6.16626	10.5000	5.18764

Source	DF	Mean square	F	Sig
Change	2	1112.820	95.184	.001

In the present study, out of 20 subjects, it was observed that 7 (35.0%) subjects showed marked improvement, 9 (45.0%) subjects showed moderate improvement and 4 (20.0%) subjects got minimal improvement.

By this we can infer that *Shamanoushadhi* i.e., *Guduchi Kwatha* and *Karanja Beeja Taila* has good result in the management in *Ekakushta* vis-à-vis Chronic plaque psoriasis.

Discussion

Probable mode of action of *Guduchi Kwatha*

Coarsely powdered *Guduchi* was boiled in sixteen times of water until residual portion of liquid is reduced to one eighth of entire matter and was filtered.

Since it was used for the *Shamana Karma*, it was reduced to one eighth of the portion.

Biological Activities the major biological activities of *Tinospora cordifolia* summarized in the following manner[4]

Table 8: Major and sub groups of natural products present in different parts of *Tinospora cordifolia* and their biological activities.

Active Component	Compound	Part used	Biological Activity (In Human being)
Alkaloids	Berberine, Choline, Tembetarine, Magnoflorine, Tinosporin, Palmetine, Isocolumbin, Aporphine alkaloids, Jatrorrhizine, Tetrahydropalmatine,	Stem and roots	Anti-viral, Anticancer, anti-diabetes, Anti-inflammatory, immunomodulatory, improves psychiatric conditions

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Steroids	β–sitosterol, δ-sitosterol, 20 β-hydroxyecdysone, Ecdysterone, Makisterone A, Giloinsterol	Shoot	IgA neuropathy, glucocorticoid induced osteoporosis in early inflammatory arthritis, induce cell cycle arrest in G2/M phase and apoptosis through c-Myc suppression. Inhibits TNFα, IL-1 β, IL-6 and COX-2.
Aliphatic compound	Octacosanol, Heptacosanol Nonacosan-15-one dichloromethane	Whole plant	Anti-nociceptive and anti-inflammatory. Protection against 6-hydroxydopamine induced parkinsonisms in rats. Down regulate VEGF and inhibits TFN-α from binding to the DNA

Immunomodulatory Activities[5]

T. cordifolia is well known for its immunomodulatory response. This property has been well documented by scientists. A large variety of compounds which are responsible for immunomodulatory and cytotoxic effects are 11- hydroxymuskatone, N-methyle-2-pyrrolidone, Nformylannonain, cordifolioside A, magnoflorine, tinocordioside and syringin. These natural compounds have been reported to improve the phagocytic activity of macrophages, enhancement in nitric acid production by stimulation of splenocyte, and production of reactive oxygen species (ROS) in human neutrophil cells.

Guduchi as a biologic in psoriasis

Biologic therapies for psoriasis utilize molecules that are designed to block specific molecular steps important in the pathogenesis of psoriasis.

TNF plays a central role in the pathogenesis of psoriasis, psoriatic arthritis, and a number of other disease states. TNF is released from cells as a soluble cytokine (sTNF) following cleavage from its cell surface-bound precursor (transmembrane TNF, tmTNF). Both sTNF and tmTNF are biologically active, and bind to either of the two distinct receptors: TNF receptor 1 (TNFR1, p55) and TNF receptor 2(TNFR2, p75). This leads to NF-kB activation (which promotes inflammation) and ⁄ or cell apoptosis. In addition, tmTNF can itself act as a ligand (via a process of reverse signaling) to induce cell activation, cytokine suppression, or apoptosis of the tmTNF bearing cell.[6]

Guduchi with its steroidal and aliphatic compounds inhibits TFN-α from binding to the DNA.

It also inhibits the IL-1 β, IL-6 thereby inhibiting the epidermal proliferation.

Hence *Guduchi* can be considered under the biologics which inhibits the TFN-α.

Probable mode of Action of *Karanja Beeja Taila*

Discussion on the action of *Taila* in general as an external application[7]

The keratin layer acts as a reservoir for a drug, hence *Taila* slowly diffuses into the deeper layer of the skin for many hours. The *Taila* also acts as a lubricant which may help to reduce the fissure formation within the lesions and assists in maintaining flexibility and elasticity of the affected skin.

Study on the effect of oil has shown keratinocyte proliferation inhibition, retarding cell division to 90% level.

The formulation of *Karanja* are proven to be effective on chronic plaque psoriasis as it has Karanjin and pongapin. Docking scores of karanjin and pongapin with different Studied receptors were found to be comparable to that of methotrexate, a known drug for treating psoriasis. Pongapin and Karanjin could be natural alternatives in curing psoriasis.[8]

Conclusion

Ekakushta is a *Vata Kapha Pradhana Rakta Pradoshaja Vikara* and one among the *Kshudra Kushta* which bears a greater resemblance with chronic plaque psoriasis.

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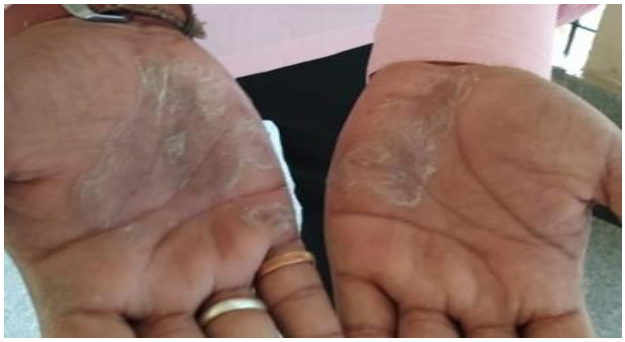
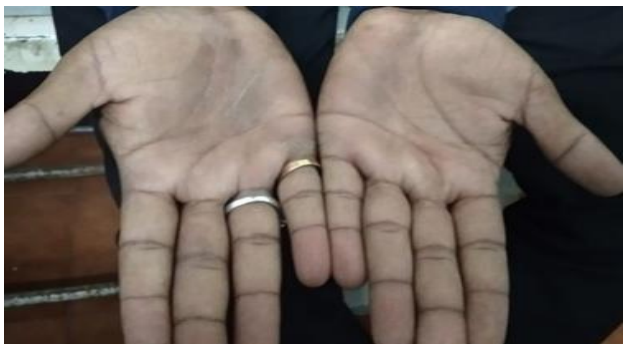
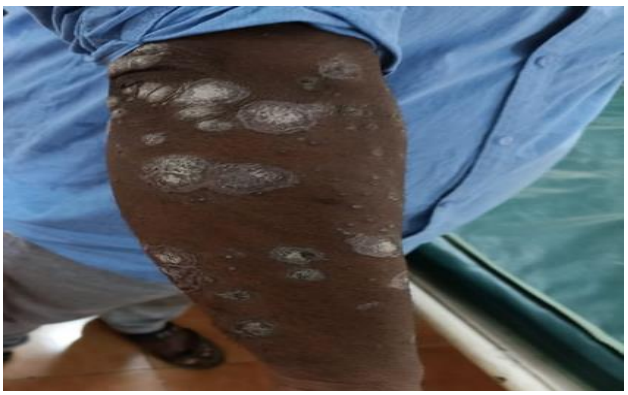
There is no separate explanation mentioned in the classics regarding *Nidana, Purvarupa* and *Samprapti* of *Ekakushta*. In the present study, in most of the subjects *Nidana* of *Kushta* and genetic predisposition was observed. Majority of symptoms such as *Matsya Shakalvat Twacha* (silvery scaly lesions), *Krishna Aruna Mandala* (black or reddish-brown lesions), *Mahavastu* (extensive lesions), *Abhraka Patra Sadrisha* (like mica) were observed which is similar to that of chronic plaque psoriasis. For the diagnosis of *Ekakushta* the features like candle grease sign, auspitz sign and koebner's phenomenon were observed in subjects. A clinical study was conducted using *Guduchi Kwatha* in the group consisting of 20 subjects with external application of *Karanja Beeja Taila* for 30 consecutive days. Intervention was started after *Virechana Karma* in both the groups. *Guduchi Kwatha* was effective in reducing erythema. Out of 20 subjects, it was observed that 7 (35.0%) subjects showed marked improvement, 9 (45.0%) subjects showed moderate improvement and 4 (20.0%) subjects got minimal improvement. No adverse effects of drugs were reported in the present study.



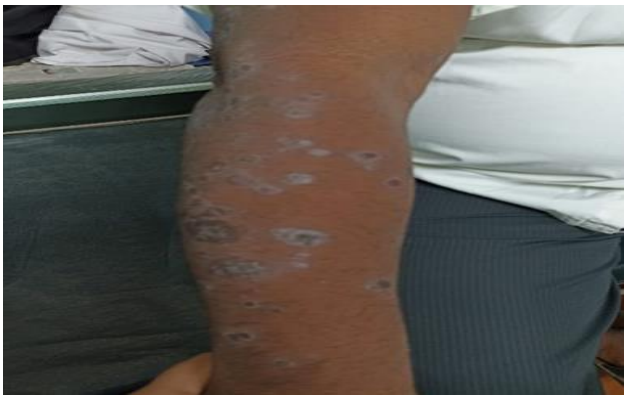
Before Treatment



After Treatment



Before Treatment



After Treatment

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