



EVALUATION OF THE EFFICACY OF *KATABHYADI KALKA* IN *PAEDERUS DERMATITIS*- A CLINICAL STUDY”

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Abstract: Paederus dermatitis/Blister beetle dermatitis (BBD) is a true irritant contact dermatitis of seasonal variability. It has a worldwide distribution but is mostly reported from areas with hot tropical climate usually at the onset of rain. The common species of Paederus seen in India is Paederus melampus. The contact with these insects affects the exposed site of body such as extremities, face and neck.

Beetles are nocturnal in nature and are attracted to artificial light, hence they are mostly found in densely populated places like hostels, apartments etc. Accidentally brushing or crushing the insect against the skin causes the release of its coelomic fluid, which causes a particularly irritating contact rash with symptoms of itching, burning, redness, blisters and skin lesions. These symptoms must be treated in time and therefore an effective treatment method is needed.

This beetle can be included under the groups of *Keetas* (insects) based on the symptoms it exhibits. In *Ayurveda*, *Keeta Visha* is described under *Jangama Visha*. *Acharya Susruta* explains 67 varieties of *Keeta* under 4 groups. Diagnosis and treatment of *Keeta Visha* according to its variety is found to be very difficult due to improper identification and regional variations. *Acharya Vagbhata* have classified whole of them as *Vataja*, *Pittaja*, *Kaphaja* and *Tridoshaja* and explained the general symptoms and treatments.

KATABHYADI KALKA is a *yoga* mentioned in *Charaka Samhitha* for *Keeta Visha*. Hence a clinical trial is planned to evaluate the efficacy of *KATABHYADI KALKA* in the management of Paederus dermatitis.

Index Terms - Paederus dermatitis, *Keeta Visha*, Paederus, *Katabhyadi Kalka*

I. INTRODUCTION

Insects are the largest group which constitute 75% of animal kingdom. As per the global burden of disease study 2013, skin disease contributed 1.79% to the global burden of disease and continue to be the 4th leading cause of non-fatal disease burden worldwide. Dermatitis is a common problem that can be seen worldwide. Paederus Dermatitis (Dermatitis Linearis or blister beetle dermatitis) a kind of true irritant contact dermatitis of seasonal variability, ^[1,2,3] caused by a poisonous Beetles of the genus Paederus belong to the family Staphylinidae ^[3,4]. Paederus melampus is the most prevalent species of Paederus found in India.

Paederus dermatitis has a worldwide distribution mostly reported from areas with hot tropical climate usually before and after the rain. ^[2-5] The exposed areas of the body, such as the extremities, face, and neck, are affected by contact with these mostly nocturnal insects. The skin issues are typically seen in the morning after waking up. ^[5,6]

This beetle does not bite or sting but brushing or crushing the beetle over the skin release extremely vesicating polyketide cytotoxin Pederin exuded from this beetles, when they are accidentally rubbed on to the skin. Subsequently, the haemo lymphotoxin Pederin penetrates the intact human skin which turns red with a burning sensation and the first clinical signs appear only about 12-24 hours.

In *Ayurveda*, management of all types of poisonous bites are dealt in a separate branch known as *Agada Tantra* which describes insect bites under *Keetavisha* which is an *Aganthuja Nidana* (external cause). *Acharya Charaka* has mentioned two type of Keetas such as *Dushivisha Keetas* and *Pranahara Keetas*. ^[10] *Acharya Susruta* explains 67 varieties of *Keeta* under 4 groups ^[11]. This beetle can be included under the groups of *Keetas* based on the symptoms it exhibits.

The text *Charaka Samhitha* mentioned a poly herbal compound *KATABHYADI YOGA* in the context of *Keeta Visha* with ingredients like *Katabhi*, *Arjuna*, *Shirisha*, *Shelu* and *Panchaksheerivriksha Twak*. ^[9, 10] It can be used in the form of *Churna* (Powder), *Kashaya* (Decoction) or *Kalka* (Paste) ^[9, 10]. In present study the *Katabhyadi Yoga* was used in the *Kalka* (paste) form for the external application in the cases of Paederus dermatitis.

II. MATERIALS AND METHODS

Drug source: The drugs of *Katabhyadi Kalka* were procured from authenticated source after proper identification and authentication certificate was obtained from *Dravya Guna Vijnana* expert. 350gm of each drug were taken. These drugs were subjected to pulverization and made into fine powder and filtered at Alvas Pharmacy Mijar and thereafter packed into 20g packs for easy dispensing.

Sample source: 40 Patients were selected from OPD of Alva's Ayurveda Medical College & Hospital, Moodbidri.

Research design: 40 patients, fulfilling the inclusion criteria is selected from the outpatient department of Alvas Ayurveda Medical College and Hospital Moodbidri for the study. The effect of treatment assessed based on the subjective and objective parameters.

Method of collection:

1. Study Design: A Randomised clinical study
2. Sample size: 40 patients suffering from *Paederus dermatitis* fulfilling the inclusion criteria of either sex were selected for the study.
3. Selection criteria: The cases were selected as per signs and symptoms of *Paederus dermatitis*.

Diagnostic criteria: 40 patients were selected and studied. This includes cases with specific diagnosis of blister beetle contact based on the symptoms were taken for the study.

Table no: 1 Keeta Visha Lakshanas

1. <i>Raga</i> - Redness	5. <i>Sopha</i> - Swelling
2. <i>Daha</i> – Burning sensation	6. <i>Pitaka</i> –Blisters and kissing type of lesions (if any)
3. <i>Ruja</i> - Pain	7. <i>Srava</i> - Secretions
4. <i>Kandu</i> - Itching	

Inclusion criteria

1. Patients presenting with the symptoms of beetle contact were selected.
2. Persons of either sex, all ages, races or socio economic conditions were selected.

Exclusion criteria

1. Patients with history of systemic and metabolic disorders like DM etc.
2. Patient with previous history of chronic skin disease and allergy.

III. PROCEDURE OF ADMINISTRATION OF DRUGS

The *Katabhyadi Kalka* ^[9] is applied over the affected part of the patient three times a day up to 3 days and washed off before drying. As per the classics it is mentioned that *Vishagna Lepa* should be applied 1/3rd thickness (0.587cms)

Observation period and follow up After 24 hours, daily up to 3 days

Follow up: 7 days after the treatment

Assessment criteria: Selected patients were thoroughly examined subjectively and objectively. Detailed history and physical findings were noted. Improvement was documented and assessed through statistical method.

After administering the trial drug, assessment was done after 24 hours in comparison with the 1st visit based on specially prepared scoring patterns. Overall assessment were done based on the reduction in the number of symptoms / severity of the symptoms.

Statistical analysis: In this study for statistical analysis of the parameters were assessed by using Wilcoxon signed rank test and S.D, S.E and 'P' values were calculate according to it.

Ethical clearance: Clearance has been obtained from the ethical committee constituted in the institution.

IV. ASSESSMENT OF OVERALL EFFECT OF THERAPY

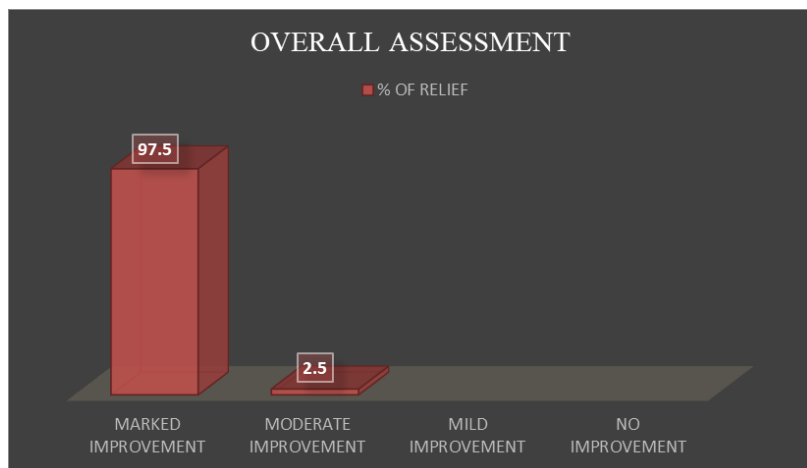
Table 2: Assessment of overall effect of therapy

Percentage of cure	Interpretation
76-100%	Marked Improvement
51-75%	Moderate Improvement
26-50%	Mild Improvement
0-25%	No Improvement

V. RESULTS

Table no 3: Overall assessment of the treatment

Criteria	Mean		M D	% of relief	P value	Significance
	BT	AT				
<i>Raga</i>	2.6	0.075	0.138	97.11%	<0.001	Significant
<i>Ruja</i>	2.27	0.05	0.095	97.8%	<0.001	Significant
<i>Daha</i>	2.05	0.1	0.18	95.1%	<0.001	Significant
<i>Pitika</i>	1.4	0.4	0.07	67.5%	<0.001	Significant
<i>Kandu</i>	0.87	0.075	0.138	91.5%	<0.001	Significant
<i>Sopha</i>	1.2	0	0	100%	<0.001	Significant
<i>Srava</i>	0.5	0	0	100%	<0.001	Significant

Table no 4: Overall assessment of patient

VI. DISCUSSION

1. Discussion on clinical study

The diagnostic criteria's selected for this study were Ruja, Raga, Daha, Kandu, Pitika, Sopha and Srava. All these symptoms were tried to compute by using appropriate grading scale. *Keeta Visha Lakshana* also mentions the presence of these symptoms. *Paederus Dermatitishaving* similar symptoms and in the present study these symptoms are evidently seen.

40 patients were selected for the study who were diagnosed with *Paederus dermatitis* based on the history and symptoms assessed using appropriate grading criteria.

Out of which all the 40 (100%) patients had *Ruja, Kandu, Pitika, Raga*, 87.5% had *Sopha*, 25% had *Srava* and 95% had *Daha*.

The development of these symptoms is caused by a vesicular substance found in *Paederus* termed *paederin*, which is present in the insect. The vesicant is released when the beetles are accidentally crushed on the skin, causing irritat contact dermatitis.

2. Discussion regarding *Katabhyadi Kalka*

Agadas used for treating insect poisoning (*Keeta Visha*) should have *Vishahara* and *Pittakaphahara* properties. So that the drugs of *Katabhyadi Kalka* shows the properties like *Kapha Pitta Shamaka* and *Tridosahara, Vishaghna, Kandughna, Vranahara* and *Twak Doshahara*. *PD (Keeta)* vitiate all the three *Doshas* but predominantly *Pitta* and *Kapha*. By this properties *Katabhyadi Kalka* can be considered as effective against *Paederus dermatitis*

3. Discussion on Results

The effect of treatment was assessed by Wilcoxon Signed rank test.

- **Raga:** The effect of *Katabhaydi Kalka* in *Raga* shows significant result and 97.1% improvement in the whole symptoms. The drugs poses *Pittahara* action by both its *Rasa* and *Virya*. *Raga* is mainly due to the *Pittaprakopa*. *Sheeta Virya* drugs will actas *Pittaprashamana*.

- **Pitaka:** Effect on *Pitaka* is 67.7% improvement and shows statistically significant. Because of the *Thikta* and *Kashaya Rasa*, *Vishaghna*, *Srothoshodhana* and *Twakdoshahara* properties of the drugs which does the *Kapha Vata Shamana* gives a better effect in *Pitaka*.
- **Daha:** 95.1% relief and significant. *Nyagrogga*, *Udumbara* are *Dahaprashamana* in nature.
- **Ruja:** The effect on *Ruja* is 97.8% improvement and significant result was observed. *Katabhyadi Kalka Lepa* when applied create *Vibanda* in the *Srotas* thus not allowing the further spread of *Visha*. Hence *Ruja* caused due to the intensity of *Visha* is reduced. *Panchaskeeri Vriksha* has *Aashupeedahara* hence act in *Ruja*. *Shirisha* had *Vedanasthapana* action.
- **Shopha** shows 100% improvement and shows significant statistically. The drugs of the formulation are considered as *Shothahara*. Due to the properties of drug the *Kapha* is eliminated and hence *Sotha* is reduced.
- **Kandu:** shows 91.4% improvement and significant statistically. *Shirisha*, *Parisha* had *Kandugna* property.
- **Srava:** shows 100% improvement and shows significant statistically. The drugs have *Peedana*, *Ropana* and *Sodhana* property. The drugs of *Katabhyadi Kalka* having *Panchaksheri Vriksha* having *Grahi* and *Stambhana* property hence act in *Srava*. The *Stambhana* effect is due to the *Sheeta Virya Dravya* present in the formulations.

The drugs of *Katabhyadi Kalka* having 9 drugs out of which 7 are *Sheeta Virya* in nature and poses *Vishgna*, *Vranaropna*, *Kandugna*, *Twakdoshahara*, *Kapha Pitta Shamaka*, and *Tridosahara*.

VII. PROBABLE MODE OF ACTION OF KATABHAYADI KALKA

Lepa (Vishaghna) is one of the important *Bahiparimarjana Chikitsa* (external therapies), which subsides vitiated *Doshas*. Most of the *Vishaghna Lepas* (antitoxic applications) are *Tridosahara* mainly *Pittahara* (*Brajaka Pitta* is situated in *Twacha*) and due to *Ashraya Aashrayibhava* they remove vitiated *Doshas* from the *Raktha* and act as *Vishaghna*. All *Vishaghna Lepas* due to their *Guna* and *Veerya* act as *Doshaghna Lepa*. *Lepa* helps to remain in the site properly allowing its potency to enter the *Swedavahini srotas* through the *Romakoopas* making the action of the application quick and effective. *Paederus dermatitis (Keeta)* vitiate all the three *Doshas* but predominantly *Pitta* and *Kapha*.

Katabhyadi Kalka having 9 drugs which shows the properties like *Kapha Pitta Shamaka* and *Tridosahara*, *Vishaghna*, *Kandughna*, *Vranahara* and *Twak Doshahara*. The drugs like *Arjuna*, *Shelu* and *Panchaksheeri Vriksha* possess *Sheetha Veerya*, might be antagonizing the *Ushna* and *Theekshna* effect of *Visha*. Some of the drugs of this *Yoga* are individually *Vishaghna* and in combination of drugs would bring about impressive effects. *Paederus dermatitis (Keeta)* vitiate all the three *Doshas* but predominantly *Pitta* and *Kapha*.

Katabhyadi kalka contain carbohydrates, resin, steroids, proteins, starch and tannins works by decreasing inflammation and helps in lowering the tissue damage, anti-microbial, disinfectant, antioxidants, antiseptic and toning properties.

Water was used as medium for application of *Lepa*, which has the properties of *Sheetha Veerya*, cures burning sensation, disorders of *Pitta, Rakta*. Thus, the combination of *Katabhyadi Kalka* with water is found to be effective in the present study.

VIII. CONCLUSION

Insect bite reactions are commonly seen in clinical practice. *Paederus dermatitis* is a common condition with a high level of public awareness and suspicion.

- The unintentional brushing of female insect against the skin usually at night release its coelomic fluid causing a peculiar irritant contact dermatitis with symptoms like itching, burning sensation, redness etc common in the exposed areas like face and other extremities.
- *Keeta visha* has been mentioned from Vedic period till date and have significant role in the manifestation of *Visha*. The treatment modalities are mentioned by our *Acharyas* and the ancient *Visha Vaidyas* which are cost effective and easily available.
- Hence a *Yoga* is selected from *Charaka Chikitsa Sthana* which is fulfilling the above characteristics was studied and the results were analysed.
- The drugs of *Katabhyadi Kalka* possess *Vishgna, Vranaropna, Kandugna, Twakdoshahara, Kapha Pitta Shamaka*, and *Tridoshahara* properties counteract the symptoms caused due to PD.
- While analysing the result statistically, significant result with ($P < 0.001$) in relieving *Ruja, Daha, Kandu, Sopha, Srava, Pitaka* and *Raga* were observed

IX. REFERENCES

1. Anuj Taneja, Sudhir Nayak UK, Shrutakirithi D Shenoi, Clinical and epidemiological study of *Paederus dermatitis* in Manipal, India, Journal of Pakistan Association of Dermatologists 2013;23 (2)Pgno:133-138
2. Shibhani Sudheer Hegde, Ramesh Bhat M, An outbreak of blister beetle dermatitis in a residential school: A clinical profile, Muller Journal of Medical Sciences and Research, 2017, Vol 8 , Issue 1 , Pgno:47-51
3. Gurucharan Singh, Syed yousuf Ali, *Paederus dermatitis* a review article, Indian Journal Dermatol Venorol Leprol January- Febuvary 2007, Vol:73, Pgno:13-15
4. Srinath M. Kambil, A Study Of Blister Beetle Dermatitis, International Journal Of Research In Dermatology, 2018, ,4(1):Pgno:72-74
5. Vinitha Gupta, Clinical study of 100 cases of beetle Dermatitis in rural population of Gurgon, Journal of evolution of Med and Dent Science, 2014(10),.: pgno:4367-4372

6. Asit Mittal, Sharad Mehta et al, A Study of Beetle Dermatitis, Indian Journal of Clinical Practice Vol 23 No 11, 2013,Pgno:714-716
7. Srihari S, Kombettu AP,Rudrappa KG,Betkerur J.Paederus Dermatitis:A case series, Indian Dermatol online J , 2017; Vol 8,Issue :5,Pgno:361-364
8. R Nikhita,R Srithilak and M V Radhakrishnan, Prevalance of Paederus Spp and dermatitis in Annamalainagar, Chidambaram,Tamil nadu, Journal of Entomology and Zoology studies,2014;2(4)Pgno:194-196
9. Sreedevi Anil Kumar and Sumanth Shenoy H, review and priliminary phytochemical screening of katabhyadi yoga - a promising remedy for keeta visha (insect poisoning), www.wjpps.com vol 9, issue 7, 2020,pgno:810-818
10. Agnivesa Charaka Samhitha,with Ayurveda deepika vyakhya of Chakrapanidatta,edited by vaidya Yadavji Trikamji Acharya , Chaukamba Orientalia, Varanasi,edition-2011,Chikitsasthana chap-23,sloga-204,pageno-793
11. Acharya Susrutha,Susrutha Samhitha with Nibandhasangraha Commentary of Dalhanacharya and Nyayachandrika Panchika of Gayadasa,Edited by YadavjiTrikamji, Published by Chaukamba Sanskrit Sansthan, Varanasi, Reprint-2012, kalpasthana ch-8 pgno:586
12. Acharya Vagbhata, Ashtanga Hrudaya Sanskrit text with commentaries Sarvanga Sundara Arunadatta and Ayurveda Rasayanatika of Hemadri annotated by Dr Anna Moreswar Kunte and Krishna Ramachandra Sastri Navre edited by Pandit HariSadasiva Shastri Paradakara published by Chaubhamba Surbharati Prakashan,Varanasi,Reprint 2010,uttarasthana,chp-37 pgno:924
13. K.R Srikanta Murthy, Sharangadhara samhitha, Chaukambha Orientalia. Uttara khanda, Edition: 2008, Chapter-11/2, Pg No: 236.

X. INSECT-PAEDERUS/ACID FLY/BLISTER BEETLE



BEFORE AND AFTER TREATMENT

Fig 1





Fig 2



Fig:3

