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Conceptual Study on Effect of *Edagajadi Yoga* and *Gandhapashanadi Lepa* in the Management of *Sidhma Kushtha* W.S.R. to Pityriasis Versicolor

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ABSTRACT

Tinea versicolor is a common superficial fungal infection of the skin, prevalent in the hot and humid environment of India. It is caused by the Malassezia species which is a dimorphic, lipophilic fungus most frequently affecting the seborrheic areas of the body like face, neck, upper back and chest. Normally 10- 15% of the general practitioner's encounter skin disorders in their day to day practice with overall prevalence rate of 30% or more probably occurring in tropical zones. *Kustha* a type of skin disorder mentioned in *Ayurveda* is a *Tridoshaja Vyadhi*, where *Twaka, Rakta, Mamsa* and *Ambu* are the main *Dushyas*. According to *Charaka, Sidhma* is a *Kapha Vata Pradhan Vyadhi* and According to *Sushruta, Sidhma* is *Kapha Pradhan vyadhi*. Management of *sidhma* includes *Shodhana, Shamana* and *Bahirparimarjana Chikitsa* among them *Shamana* in the form of *kwatha & Bahirparimarjana Chikitsa* as *Lepa* has shown appreciable result in many previous researches. So, need of time is to go for cost effective, safe and efficient treatment of *Sidhma*. Although, there are many drugs available in modern medical science for the treatment of Pityriasis versicolor which is found to be effective but is unsatisfactory for long term prophylaxis, so there is need of the hour to look into the safe, efficient & satisfactory remedy which not only treat the above ailments, but also ensure reduction in the episodes of relapse of the disease. Keeping all the above points in mind *Edagajadi yoga* & *Gandhapashanadi lepa* has been selected to know its efficacy in treating *Sidhma kushtha* (Pityriasis versicolor). *Edagajadi yoga* & *Gandhapashanadi lepa* consists of 10 drugs with different properties which includes *Edagaja, Vidanga, Haridra, Daruharidra, Amlatasa, Kushta, Pippali, Gandhak, yavkshar, sarshapa taila.*

Keywords: *Sidhma*, Pityriasis versicolor, *Edagajadi yoga*, *Gandhapashanadi lepa*

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INTRODUCTION

Pityriasis versicolor is also known **as tinea versicolor, dermatomycosis perforatia, tinea flava, liverspots** or **achromia parasitica** is a chronic recurring non-contagious superficial mycotic infection characterized by scaly, dyspigmented irregular macules most often occurring on the trunk and extremities. Skin pigmentary changes occurring on the lesions are due to colonization of the stratum corneum by a dimorphic lipophilic fungus known as Malassezia furfur yeast[1] . Increase in humidity, temperature and carbon dioxide tension are important predisposing factors[2,3]. An overall prevalence rate of 30% or more probably occurs in tropical zones, the actual frequency of the disease in temperate climates is not known[4].

Tinea versicolor is generally a disease of mature adults when the sebaceous glands are most active, with 2:1 prevalence ratio in female & male patients; however, studies performed in the tropics indicate that tinea versicolor in childhood is common[5]. According to *Acharya Charaka*[6], *Sidhma* is characterized by fine branny desquamation, appearing similar to the color of *Alabupushpa* (*Lagenaria siceraria* (Mol.) Standl). The lesions of *Sidhma* are white or coppery in color resembling to P. versicolor in terms of scaling, site and color of the lesion. *Sidhma* is categorized under *Mahakushtha by* Acharya *Charaka* & in *Kshudra kushtha* by Acharya *Sushrutha* means the type of *Kushtha* which neither progresses nor decreases but remains static for a longer time. Acharya *Dalhana* clarifies there are two types of *Sidhma Kushtha* as *Sidhma* & *Pushpikasidhma*. The *Dosha-dushya sammurchhana* in *Pushpikasidhma* is weak, local immunity is strong & hence the *samprapti* does not invade the consecutive *dhatus* at all & gets cured earlier. *Haranachandra*, the commentator of *Sushruta Samhita* has

given the meaning of *'Apayi'* as the disappearing in the winter season and *'Akastakari'* i.e. not troublesome to the patient.

Pityriasis versicolor is caused by Malassezia yeast, a dimorphic fungus[7]. and a member of normal skin flora of human beings which under certain conditions, transforms into filamentous pathogenic forms[8]. Malassezia, the causal agent of Pityriasis versicolor is preferred to be same polymorphic organism as *P. orbiculare* and *P. ovale* by its historic value. The change in budding blastospore form to the hyphal form is under the influence of endogenous and exogenous predisposing factors. In patients affected with *P. ovale*, the lesions of tinea versicolor were found mainly on the trunk i.e below the waistline, buttocks, and thighs, whereas those with *P. orbiculare* had a predilection for the chest, neck, face, and upper limbs. Overgrowth of microorganism is caused by triggering factors like increased temperature, humidity, immunosuppression, hormonal imbalance, excessive oily skin, increased TEWL mainly on seborrheic areas or in population with hyperhidrosis[9].

Rationale

Dravya is an organized thing. Property of a substance can be changed but not the substance. Ayurveda uses drug as a whole for therapeutic activity therefore it remains organized. According to *Ayurveda*, *Dravya* (*Aushadha*) is considered as one of the four-fold constituents of *"chikitsa chatushpada"*, which works on seven parameters like *rasa, guna. veerya, vipaka* & *prabhava*. Ayurveda gives importance to immunity instead of microbes; thus, drugs have pharmaco-therapeutic effect instead of having pharmaco-dynamic effect. The right choice of *dravya* helps in reversing or breaking the *samprapti* without producing any side effects.

A number of formulations have been mentioned in Ayurvedic classics for the treatment of *Sidhma Kushtha. Vata* and *kapha* are the predominant *dosha* involved in the pathogenesis of *Sidhma kushtha.* Therefore, the treatment should be focused on *vata-kapha hara* line along with *swedakelda upashoshana, krimi nashaka* & *srotoshodhana* of *rasadi srotas*.

Keeping aforesaid points in mind & considering previous evident researches *Edagajadi Yoga(kwatha*) as well as *Gandhapashanadi lepa* has been selected for internal *shodhana* and *bahirparimarjan chikitsa* respectively to know their effectiveness & reliability in treating *Sidhma kushtha*

Aims and Objectives

To evaluate the role of *Edagajadi yoga* and *Gandhapashanadi lepa* in the management of *Sidhma kushtha* with special reference to Pityriasis versicolor.

MATERIAL AND METHODS

Ayurvedic textbooks were referred to collect the relevant materials.

The index, non-index medical journals were referred to collect relevant information.

Drug Review: Even the ancient sages were well aware of skin conditions like *Sidhma kushtha* and various descriptions regarding the disease have been mentioned in different classical textbooks by different *Acharyas.* Moreover, the *Acharyas* have mentioned several herbs and formulation in the management of *Sidhma kushtha.* They all are potent in its own way in the management of *Sidhma kushtha.* Out of many such formulations, the aforesaid combinations were selected for the study.

Edagajadi yoga (Kwatha)

एडगजः सविडङ्गो द्वे च निशे राजवृक्षमूलं च| कुष्ठोद्दालनमग्र्यं सपिप्पलीपाकलं योज्यम्||१६१||

-Ref Cha.chi (Kushtha chikitsa 07/161)

Table 1: Quantity of Ingredients taken for preparation of *Edagajadi yoga (kwatha).*

S.No	Drug (Sanskrit)	Botanical name	Part used	Quantity
1	***Edagaja***	***Cassia tora***	**Seeds**	**1 part**
2	***Vidanga***	***Embelia ribes***	**fruit**	**1 part**
3	***Haridra***	***Curcuma longa***	**Rhizome**	**1 part**
4	***Daruharidra***	***Berberis aristata***	**Root**	**1 part**
5	***Amlatasa***	***Cassia fistula***	**Root**	**1 part**
6	***Kushta***	***Saussurea lappa***	**Root**	**1 part**
7	***Pippali***	***Piper longum***	**Fruit**	**1 part**

Preparation of *Edagajadi yoga (kwatha)*.

All the seven dry herbs 1-7 were collected in required amount and grinded into coarse powder. The raw drugs were grinded into pulverizer and filtered in sieve with mesh number 22.

Gandhapashanadi lepa

गन्धपाशाणचूर्णेन यवक्षारेण लेपितम । सिध्म नाशं व्रजन्त्याशु कटु तैलयुतेन च ||

Ref: ***Bhaishajya. Ratnavali, Kushtha Roga adhikar* 54/25**)

Table 2: Quantity of Ingredients taken for preparation of *Gandhapashanadi lepa*

S.no.	Sanskrit Name	Quantity
1.	***Shuddh Gandhak***	**1 part**
2.	***Yavakshar***	**1part**
3	***Sarshapataila***	**As per needed**

Preparation of *Gandhapashanadi lepa*

The two dry ingredients 1-2 were collected in required amount and grinded into fine powder. This mixture was then filtered out in sieve and mixed in the form of homogenous consistency.

Results:

On thorough analysis of the ingredients in Ayurveda classics and recent pharmaco-analytical researches reported, a sufficient & effective data was obtained. The drugs selected exhibits the following properties and pharmacological activity, specific against the causative factors of *sidhma kushtha* as well as against the pathogenicity of *Malassezia* spp. in pityriasis versicolor.

Table 3: Showing properties and pharmacological action of ingredients

Drug	*Rasa*	*Guna*	*Veerya*	*Vipaka*	*Dosaghnata*	*Karma*
Chakramarda	*Kaṭu*	*Laghu, Rukṣa*	*Uṣṇa*	*Kaṭu*	*Kaphavatahara*	*MedaDadrukandu hara* *Kanti saukumar ↑ (D.N)*
Vidanga	*Katu, Kashaya*	*Laghu, Rukṣa, Tiksna*	*Uṣṇa*	*Kaṭu*	*Kaphavatahara*	*Krimighna,kusthag na*
Haridra	*Kaṭu ,Tikta*	*Laghu, Rukṣa*	*Uṣṇa*	*Kaṭu*	*KaphaPitta Shamak*	*Kandughna ,krimighna* *Deha-varnvidhayini*
Daruharidra	*Kaṭu ,Tikta*	*Rukṣa*	*Uṣṇa*	*Kaṭu*	*Kapha-Pitta Shamak*	*Kandughna* *Tiktarasayana (D.N)*
Aragwadha	*Madhura, Tikta*	*Guru. snigdha .mridu*	*Sheeta*	*Madhura*	*Vata -Pitta Shamak*	*Kusthaghna, kandughna, raktashodhak*
Kushtha	*Tikta, Kaṭu Madhura*	*Laghu, Rukṣa, Tikṣṇa*	*Ushna*	*Kaṭu*	*Kapha-vata śamaka*	*Kushthamarut-kaphan(B.P)*
Pippali	*Kaṭu*	*Laghu,,Snigdha, Tikṣṇa*	*Anuṣṇa Sita*	*Madhura*	*Vata–Kapha Śamaka*	*Deepana pachana Medanashini ,* *Kriminashini (cha.Su)*
Sarshapa taila	*Katu tikta*	*Tikshna Snigdha, laghu*	*Ushna*	*Katu*	*kaphaVatahara*	*Krimighna , kandughna, ksuhthagna(su.su 45)*
Gandhak	*Madhura, Katu, Tikta, Kashaya*	*Ushna, Sara, Snigdha*	*Ushna*	*Katu*	*KaphaVatahara, Pittavardhaka*	*Dadru, Garavisha, kushtha, Kandu*
Yavakshara	*Katu*	*Tikshna,Ushna,* *Laghu,Ruksha*	*Ushna*	_	*Kaphavatahara*	*Lekhana, Varnavardhak, krimighna*

Chakramarada

Chakramarda seeds have phytochemical constituents like anthraquinone glycosides, naptho-pyrone glycosides, cassia-side etc. which showed significant hepatoprotective activity. Thrachrysone, isolated from seeds, showed stronger antioxidant activity than tocopherol and BHA. Chrysophanic acid-9-anthrone, extracted from the seed, was found to be active against ringworm fungi[10] & is been found to have Hypolipidemic action[11](showed marked reduction in serum concentration of total cholesterol and triglyceride level). It possesses strong antifungal action against *Candida albicans, Aspergillus niger, Sachharomyces cerevisiae* and *Trichophyton mentagrophyte*[12] along with Anti-inflammatory activity against histamine, serotonin and dextran induced oedema[13].

Vidanga

A recent study with ethyl acetate (EA) and petroleum ether (PE) extracts of 16 Indian medicinal plants from 15 different families were subjected to screen growth inhibitory potential against M.furfur. Amongst all extracts, the maximum degree of activity was observed in *Embelia ribes.* The EA and PE extracts of *E. ribes* have shown considerable

growth inhibition potential against M. furfur i.e of about 65 and 77%, respectively.[14] 'Embelin' a major phytochemical constituent of E. ribes against M. furfur, was isolated from herb as described by *Madhavan et al.* (2011)[15]. The higher activity of hydrophobic extract (PE) and non-responsiveness of hydrophilic counterpart (M) indicated the hydrophobic nature of the active principle responsible for antifungal activity in E. ribes against M. furfur. Since the hydrophobic compound 'embelin' has been reported as the major and signature phytochemical of E. ribes [16], it is conjectured that embelin would be the molecule responsible for antifungal activity of E. ribes against M. furfur.

Haridra

As per the research, *Haridra* contains Curcumin which showed significant anti-inflammatory activity[17].Water- and fat-soluble extracts of turmeric and its curcumin component exhibit strong antioxidant activity, comparable to vitamins C and E[18].Wuthiudomlert et al. (2000) who reported the antifungal activity of turmeric oil against 29 clinical strains of dermatophytes found that diameter of inhibition zone on screening of turmeric oil was found to vary from 26.1 mm to 46 mm against 29 clinical strains of dermatophytes[19]. The study conducted by Sharma et al displayed the strong antifungal activity against M. furfur. On screening, it was observed that the turmeric rhizome showed the diameter of inhibition zone by disc diffusion method (55 mm) against M. furfur at 100% concentration of pure oil[20].

Daruharidra

The most active ingredient of the plant is berberine, a quaternary isoquinoline alkaloid and the content of berberine-typically found in the roots, rhizomes and stem bark. It has immune-stimulating, anti-inflammatory, antimicrobial, antifungal[21],antiprotozoal activities.[22] The MIC value of the B.aristata root extract against M. furfur was found to be 100µg/ml[23] which indicates that it could be a good source for the anti-fungal medicine.[24] The efficacy of such herbal agents in acne treatment is not only based on anti-microbial activity but also on their antioxidant and anti-inflammatory properties as well by which they inhibit neutrophil migration and generation of reactive oxygen species[25]. B. aristata is used in skin diseases due to its skin detoxification property[26].

Aragwadha

C. fistula was found beneficial in treatment of *Sidhma Kushta* (pityriasis versicolor)[27]. The hydroalcoholic extracts of Cassia fistula leaves contained tannins, flavonoids, saponins, triterpenoids, steroids, glycosides, anthraquinones, reducing sugars, carbohydrates, proteins, and amino acids[28]. Results show that plant rich in tannin and phenolic compounds have been shown to possess antimicrobial activities against a number of microorganisms[29] *C. fistula* showed strong antimicrobial effect against superficial dermatophytes predominantly towards *M. furfur* with Inhibition zones >10 mm indicating strong antimicrobial activity[30] & antifungal activity[31] . The hydroalcoholic extracts of *Cassia fistula* were found to be active on most of the clinically isolated microorganism and fungi, as compared with standard drugs.[32]

Kushtha

This plant contains active principles like saussurine, costunolide, lactones and the pharmacological activity of this plant reported for its hepatoprotective, hypoglycemic, anti-diabetic, anti-inflammatory, antiviral, and antifungal effects[33]. In a study by Abdullah et al *S. costus* has showed high significant level of antifungal activity[34]. In the scientific literature, the biological activities of the roots of S. costus (synonymous with *S.lappa*) are widely investigated. Scientific investigations revealed that it has anti-trypanosomal activity (*Julianti* et al, 2011) & has "complement-inhibitor" substances helpful in the treatment of some diseases related to excessive activation of the complement system, like rheumatoid arthritis, respiratory distress and systemic lupus erythematosus (Fan et al., 2014). It was published that S.costus has a good anticancer activity tested on cell lines (Robinson et al., 2008). The ethanol extract of *S.lappa* (synonymous *S.costus*) recorded a wide spectrum antimicrobial activity against some human pathogens (Hasson et al., 2013). In addition, many investigations reported other bioactive properties of S. costus roots such as anti-ulcer, anti-inflammatory, hepatoprotective, immunomodulator, hypoglycaemic, spasmolytic, anticonvulsant, antidiarrheal and antiviral activity (Zahra et al., 2014 Ghansham et al., 2017).

Pippali

Malassezia fungus is an exception because it occurs as opportunistic yeast in humans as well as in other animals. M. furfur is of significant importance for its action on human skin & scalp causing pityriasis versicolor, dandruff and responsible for skin & hair disorders. The percentage inhibitory effect studies by Gomare et al on the activity of lipase using extracts of nine mentioned plants individually was found maximum by the extract of Piper longum (Linn.) as 35.32% compared to the rest of the plant extracts.[35] Gabriella (2011) stated that the phospholipase activity of Malassezia spp. take part in the initiation of skin lesions, particularly in case of pityriasis versicolor (PV), although phospholipases should be measured as only one of the many factors involved in the complex interaction between the yeast and its host leading to the expansion of skin lesions. According to Sparber (2017), Malassezia species show lipid-dependency and lipolytic enzymes, such as lipases are required for the organism to obtain fatty acids from the surroundings.

Gandhak

In addition to keratolytic activity, sulfur has mild antifungal and antibacterial activity. However, its precise mechanism of action is unknown. When applied to skin, sulfur is thought to interact with cysteine, present in the stratum corneum, to form hydrogen sulfide[36]. Hydrogen sulfide can break down keratin, thus demonstrating sulfur's keratolytic activity. Pentathionic acid, which is toxic to fungi, is also formed by cutaneous bacteria as well as keratinocytes from topically applied sulfur[37]. In addition, the keratolytic effects may promote fungal shedding from the stratum corneum[38].

Yavkshar *Yavkshar* a Carbonate of Potash is alkaline herbal formulation maintains buffer balance of skin pH[39]

Sarshap taila[40] It has *Lekhana, Kusthghna, Jantughna, Vednasthapana* and *Snehana* properties. Oil is a skin and mucous membrane irritant, Emetic stimulant, digestive stimulant, antipruritic, sporostatic, antifungal[41].*Glucinolate,* the pungent principle in mustard oil, has antibacterial, antifungal and anticarcinogenic properties[42].

DISCUSSION

Edagajadi yoga (kwatha) is a polyherbal formulation consisting of *Edagaja, Vidanga, Haridra, Daruharidra, Amlatasa, Kushta, Pippali.* Amongst all the ingredients it can be observed that, the overall formulation is predominantly having *katu* (pungent), *tikta*(bitter), *kashaya*(astringent) *rasa* and *ushna veerya* with *katu vipaka.* These properties act on *agni* and helps in *amapachana*, forming proper *ahara*

rasa which is *kleda rahita* (properly metabolized food). *Tikta rasa* is *Deepana, Pachana lekhana, kledameda upashoshana*, thus it helps in *Ama pachana* formed due to *Nidanasevana. Tikta rasa is Raktaprasadana, Vishaghna, Kushthaghna, Kandughna* and *krimighna* & *sweda upashoshana*

Katu rasa is *Vishaghna, Kandughna, Krimighna, Varnaprasadana. Acharyas* in Ayurveda classics have mentioned *katu rasa* as *"sneha-kleda mala anupahanti"* which helps in normalizing the *karma* of *mala* i.e *sweda (kleda vidrati),* "*Marganvivrunoti*" which means it clears the *Srotas* and arrest pathogenesis by preventing *Doshadushya samurcchana,.*

The *tikshna guna* present in all drugs corrects the *dhatvagni* (metabolism at the level of tissues) and almost all the ingredient have actions targeted on *rasa, rakta, mamsa & lasika,* which are primarily responsible for *kushtha samprapti*. *Laghu guna* being *akasha mahabhuta pradhana* is *urdhvagati sheela* hence very easily removes *dosha* from *urdhwabhaga* i.e from chest neck face, back, upper extremities hence could help with healing main site of lesions in manifestation of *sidhma kushtha*

All the drugs have *laghu*, *ruksha* properties which checks the *kandu* caused by *kapha dosha* and balances the *vikrit pitta* with *sheeta-pachaka* property.

Amongst all the ingredients *Aragwadha* specifically has *madhura rasa, sheeta veerya madhura vipaka & guru, snigdha* properties which is useful to pacify the *pitta dosha* in *rakta*. It also helps in *sarvadhatu vardhan* and act as *rasayana. Kleda shoshana* is done effectively by the *kwatha* form of drugs along with effective, safe and early metabolism of all pharmacologically potent active principles of formulation.

In the overall formulation some drugs *like Aragwadha* were found to have *mridu virechaka* properties and the rest has *srotoshodhana* & *vata anulomana* as their major function. These properties are very critical in destroying *doshasanghata* which is very critical in *kushta,* as *Acharyas* have laid specific importance towards frequent *shodhana* in *kushtha.*
Gandhapashanadi lepa is combination of drug *Shuddha Gandhak, Yavakshar, Sarshapa tail. Sidhma kushtha* is *Twakgata,* that means, extremely superficial*.* Hence, here, in this study, *Lepan Karma* is selected for the treatment as per the indication by *Acharya Sushruta. Acharya Charaka* has described *Lepana* as *"Sadya Siddhi Karaka"* because external applications play a key role in the treatment of *Kushtha*.

Yavkshar & sarshapa taila is found to pacify *kapha- vata dosha* due to *katu. tikta rasa, ushna veerya, katu vipaka* while *gandhak* has *madhura rasa* which helps in pacification of *pitta dosha. Yavakshar* with its *Lekhana* property is found to have deeper cleansing action on local site of lesion. The active principles of the *Lepa* reach to the deeper tissues through *siramukha* in *swedavahi srotas* & stains it with its *Sukshma* & *Tikshna* property. Due to its *Ushna, Tikshna, Vishad* & *Sukshma* properties it deblocks the obstruction in *swedavahi srotas* & allows the local toxins to flow out through the *Sweda*, thus clearing out the micro channels. The *Ushna Virya* of *Gandhapashanadi lepa* & *Snigdha Guna* of its vehicle i.e. *sarshapa taila* causes pacification of *Vata* & *Kapha* which forms the *samprapti* thus alleviating the symptoms.

CONCLUSION

Edagagajadi yoga is a herbal preparation mentioned under context of *vatakaphaja kushtha* by *Acharya Charaka* for the purpose of *snana, pana, lepa.* On reviewing various other texts *Gandhak, yavkshar* in base of *sarshapa taila* was found most effective with its targeted action on *sidhma.* These formulations are indicated in all types of *kushtha* and were found to be more effective in *sidhma* on critical analysis of its properties, active principles and pharmacological actions

While expounding over the line of treatment of *Kushtha*, *Acharya Charaka* has made it very clear that, let all the *Kusthas* be *Tridoshaja*, their treatment should be initiated only after considering the dominance of *Dosha* in them. The predominantly vitiated *Dosha* should be treated first & the treatment of the other subordinate *Dosha* should be undertaken afterwards. The treatment plan of *Krimi* comprises three principles as *i) Apakarshana ii) Prakritivighata iii) Nidana Parivarjana.* In the case of *Kushtha*, *Apakarshana* means *Samshodhana*, *Prakritivighata* means *Samshamana.* Hence, the drugs selected here for *kwatha* yoga & *lepana karma* acts as *Prakritivighata chikitsa*. Not much work is been done in this field, so clinical studies could be carried out with estimation of detailed Dermoscopic pattern of lesions in pityriasis versicolor with standard assessment criteria before and after treatment to prove its efficacy particularly against *Malassezia* spp.

CONFLICT OF INTERESTS: none

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