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Evaluation of the *Amapachana* Effect of *Panchakolasiddha yavagu* as *Pathyahara* in the Management of *Amavata* - An Open Clinical Trial

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ABSTRACT

Background and objective: In the today's hectic lifestyle the diet as well as the regimes of human beings have changed a lot. This leads to the sluggish functioning of *agni* (bio fire) and the generation of *ama* (accumulation of waste matter) in the body. The pathogenesis of *amavata* starts from gastrointestinal tract. The generation of *ama* takes place in gastrointestinal tract and further proceeds to deeper pathological roots with special inclination to seats of *Kapha dosha* especially *Sandhis* (joints). In *amavata*, *agni* becomes critically incapable of digesting food or medicine given. Only way to resolve *ama* is *langhana* (controlled fasting) with *pathyahara* (therapeutic diet) which enhances the bio fire and further digests the *ama* (*amapachana*). This study attempted to evaluate the *amapachana* effect of *Panchcakolasiddha yavagu* as *pathyahara* in *amavata*

Methods: An open clinical trial was conducted among 20 participants. The intervention was the administration of *Panchakolasiddhayavagu* till the attainment of *nirama* stage or maximum up to 10 days. *Yavagu* prepared as per the classical reference was given in morning and evening restricting all other food and medicine. *Amanirama* assessment questionnaire was used to assess the *amapachana*.

Results: *Panchcakolasiddha yavagu* shows highly significant *amapachana* effects as *pathyahara* in *amavata* ($p < 0.001$).



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Conclusion: *Panchakolasiddhayavagu* may be recommended as a highly effective therapeutic dietary preparation in *Amavata* patient, especially in the initial stage where *Amapachana* is the first line of treatment.

KEYWORDS

Panchakolasiddhayavagu, Pathyahara, Amapachana, Amavata



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INTRODUCTION

Ayurveda emphasizes the importance of *agni*. The maintenance of health, well-being; sustenance and dissolution of body of an individual depends on *agni*¹. *Ayurveda* considers *agnimandya* as the root cause of all ailments². If the *agnimandya* is not corrected on time, it leads to the genesis of *ama*. *Ama* is the partially digested, faulty formed *rasa*, i.e. the first end product of the digestion³. This *ama* is creating hindrance to the normal functioning of the body, reduces the strength of the affected individual and the proper functioning of the vital elements become impaired⁴. When the *ama* gets localized at any part of our body, it may manifest as various diseases according to the site⁵. The concept of *ama* is all available in classical literatures of both oriental and western origin^{6,7}. The sequence of procedures explained to conquer *ama* is summarised as *langhana* with warm *peya*, *laghuanna*, *rukshaodana* or *tikta yusha* followed by *niruha*, *svedana*, *pachana* and *urdhvaadhasodhana*⁸. In this condition medication is absolutely contraindicated⁹⁻¹¹. While analyzing the aetiological factors food, activities and emotional disturbances are the contributory factors of the genesis of *ama*¹². In the present era people are forced to practice unwholesome food and regime in

the midst of hectic schedules and stress. The profuse *ama* has a special inclination towards the seats of *kapha*, the joints, and leads to the crippling multiple joint disease *amavata*¹³.

The administration of medicine is explained to have toxic effect in the *sama* stage. While considering the chronicity of the disease conditions absolute fasting is also contraindicated¹⁴. According to the view of ancient scholars *ahara* is the supreme medicine¹⁵. If people follow *pathyahara* (wholesome diet) there will be no need of giving further medication; and if people do not follow the *pathyahara* (therapeutic diet) the mere medication is in vein¹⁶. Therapeutic diet is the controlled and specific utilisation of the food article as a beneficiary tool to tackle the diseased conditions¹⁷. *Aharakalpanas* (dietary preparations) are explained in all the classical texts as an integral part to maintain the health and to restore health whenever there is a possibility to get deranged from the normalcy. So it was high time to develop a safe, cost effective *ayurvedic* therapeutic dietary preparation to address the *agnimandya* and *ama*.

In *amavata*, *samasannipatikadoshadushti* is taking place. In this crucial pathological state the *doshadushti* is similar to that of



visha or it is capable to produce toxic substances and the immune system will be in a compromised phase¹⁸. The first option in the treatment of *amavata* is *langhana*^{19,20,21}. *Pana* and *anna* fortified with *panchakolasiddha* is specially indicated in *amavata cikitsa*²¹. For the purpose of *langhana koshnapeya* is indicated. The *sama* stage is immune compromised and while considering the *bala* of the patient, absolute *langhana* is not advisable. Relative *langhana* will be practically better because in *amavata* due the compromised function of *agni*, the *rasa dhatu* is not properly formed both quantitatively and qualitatively and the further *uttarottaradhatu* formation is also impaired, i.e., the individual will be in a malnourished stage. *Langhana* promotes *agni* and exhaust *ama* which eventually lead to the cessation of the chain of events in the pathogenesis¹⁴.

Even though there is description about various *aharakalpanas*, *Acharya Charaka* gives due importance to the rice gruel preparation *yavagu*. It is mentioned as a part of post operative diet in purification measures and as therapeutic diet in case of various pathological conditions²². The properties of both *panchakola* and *panchakola yavagu* are opposite to that of *ama* and both helps to kindle the *agni* and

digest the *ama*^{23,24}. This is aiming the basic treatment principle of *sampraptivighatana*, i.e, the break in the chain of events in the pathogenesis. Ultimately it results in the reversal of the mechanism of disease manifestation¹⁴.

Panchakola is having *agnideepana* (carminative), *amapachana* (digestive) and *sulahara* (analgesic) properties. *Pippali* (*Piper longum* Linn.), *pippalimoola* (root of the *Piper longum* Linn.), *chavya* (*Piper chaba* Hunter), *chitraka* (*Plumbago zeylanica* Linn.) and *nagara* (*Zingiber officinale*) are the ingredients of *Panchakola*²⁵. Application of *deepaniya* drug is for stimulation and kindling of digestive fire while *pachaneeya* drug is useful to address indigestion. The *sulaghna* and *deepaniya* effect of *Panchakolasiddhayavagu* is already mentioned in classics²⁴.

The present study was planned as an open clinical trial, in which the intervention was a controlled fasting therapy with a *pathyahara*, i.e, administration of *panchcakolasiddha yavagu*, restricting all other food articles and medicines. *Amapachana* was assessed on the basis of a *samanirama* assessment questionnaire.



MATERIALS AND METHODS

The present study was planned as an open labelled uncontrolled clinical trial. The participants for the study were selected from the Vaidyaratnam P S Varier *Ayurveda* College Hospital, Kottakkal, Kerala. Duration of the study was fixed as 18 months.

Ethical Considerations: Informed written consent in regional language was obtained in document form after being informed regarding the study, they were involved in. The plan of the study including intervention and duration were explained. Only those participants who were willing and who furnished the written consent form were included in the study. They were given the freedom to quit from the study at any part of it at their own will.

The study protocol was placed before Institutional Ethics Committee of Vaidyaratnam P.S.VarierAyurveda College, Kottakkal. After the various levels of scrutiny subsequent modifications were made based on their recommendations. Thus the final acceptance was gained and Ethical clearance was obtained for the study. The study was conducted in compliance with the protocol, ethical principles, ICMR and GCP guidelines.

Selection of Participants: A newspaper announcement was given before starting the study and screening of 52 participants was done in OPD, Vaidyaratnam P.S. Varier Ayurveda College Hospital. From the screened participants, 20 participants who were satisfying the inclusion criteria and willing to give informed written consent were included in the study.

Inclusion criteria: Participants of either sex in the age group 18- 50 of, having multiple joint pain with any four of the following confirmatory symptoms and more than two of associated symptoms, were included after getting an informed written consent. Pain all over the body (*Angamarda*), impaired taste perception (*Aruchi*), excessive thirst (*Trishna*), feeling laziness to do day to day activities (*Alasyam*), heaviness of the body (*Gouravam*), feverishness (*Jwara*), improper digestive activity (*Apaka*), generalized swelling over the body (*Anganam sunata*), general fatigue (*Utsaha hani*), constipation (*Vid vibandhata*) and excessive salivation (*Praseka*) were considered as the confirmatory symptoms.

Increased urine output (*Bahu mutrata*), disturbed sleep (*Nidra viparyaya*), excruciating pain like scorpion bite (*Vrischika damsavat vedana*), poor appetite (*Agnidaurbalyam*), burning



sensation(*Daha*), discomfort in chest(*Hrid graham*), gaseous accumulation with resonance (*Antrakujanam*), colicky pain in abdomen(*Kukshi sula*) and tastelessness(*Vairasyam*) were considered as the associated symptoms.

Exclusion criteria: Patients with chronic illness (more than 5 years) and pregnant or

lactating women were excluded. Those who had major systemic illness like uncontrolled hyperglycaemia with complications and malignant hypertension were excluded.

Selection of Drugs: The drug *panchakola* was purchased from a GMP certified drug manufacturing company (Table 1).

Table 1 Composition of *Panchakola*

S. No.	Drug	Latin Name	Family	Parts Used
1	<i>Pippali</i>	Piper longum.	Piperaceae	Fruits
2	<i>Pippalimoola</i>	Piper longum.	Piperaceae	Root
3	<i>Chavya</i>	Piper chaba.	Piperaceae	Fruit
4	<i>Chitraka</i>	Plumbago zeylanica.	Plumbaginaceae	Fruit
5	<i>Nagara</i>	Zingiber officinalis.	Zingiberaceae	Rhizome

Intervention given: Medicated rice gruel prepared of *panchakola* (*panchakolasiddhayavagu*) was given to the selected participants. The method of preparation was as per the classical reference. Rice gruel prepared with 125g rice, cooked in the *panchakolakwatha* made of 50g of *panchakola* was given twice daily. Time of administration was fixed as morning 6.30 to 7.30AM and evening, 6.30 to 7.30PM. The dietary preparation is administered till the attainment of proper digestive capacity, the optimum functioning of biofire or maximum up to 10 days.

Method of Preparation of PanchakolasiddhaYavagu: *Panchakola kwatha* was prepared on the evening one day prior to the preparation of the gruel. *Kwatha* was prepared out of 50g *panchakola*, boiling

in 3200 ml water and reduced to 1600ml. Next day morning, the prepared *kwatha* was filtered and 250g rice was added to the *kwatha* and the gruel was prepared. *Kwatha* prepared with *panchakola* in water (1:64 ratio, reduced to half), *Yavagu* prepared with the *kwatha* and rice (6:1).

Assessment and Data collection: The patient data including the socio demographic details and other relevant clinical data were collected and documented in the suitably designed data collection form designed as per the need of the study. *Amanirama* assessment questionnaire was used to assess the *amapachana* effect.

Data analysis: The collected data was checked, analysed and presented with the help of tables, graphs. Paired t test was used to assess effect of intervention DAS28 and



CRP. Statistical analysis was done by using Microsoft Office 2007 Excel, Graphpad InStat version 3, and IBM SPSS Statistics version 16.

Adverse events or complications were not reported during the course of intervention or during the follow up period. Those participants, who need further treatment or follow up after the completion of the study, were directed to the OPD or IPD of the VPSV Ayurveda College Hospital.

RESULTS AND DISCUSSION

Characteristics of study participants

The participants selected for the study had a mean age of 42.05. The study included 80% female and 20% male participants; 55% of the participants were Hindu and 45% were Muslims. Only 5% participants belonged to very poor class; 15% belonged to poor, 30% belonging to lower middle and 50% belonging to the middle class. All the participants were following mixed dietary pattern. Appetite level of 95% participants was poor. Only 5% claimed to have moderate appetite.

Angamarda, Aruchi, Alasyam, Gauravam, Jwaram, Anganam sunata, Utsaha Hani were noted in all the cases. Symptoms like *Trishna, Apaka* and *Vid vibandhata* was

observed in 90% of the participants. *Praseka* was observed in 55%.

The symptoms like *Vrischika damsavat vedana, Vairasyam* and *Agnidaurbalyam* were present in all the participants. *Nidra viparyayam* was reported by 95% participants. *Bahu mutrata* was observed in 65% of the participants. *Hrid graham* noted among 60% cases. *Antrakujanam* and *Daha* were observed among 45% participants. *Kukshi sula* was observed among 35% participants.

Katu rasa was expressed as the desired taste by 90% of the participants. *Lavana* stood second as 40% were having desire towards it. *Amla* and *tikta* were opted by 30% and 5%, respectively.

The bowel habit of 85% participants was of constipated nature whereas 15% were having the normal bowel. Based the character and volume of urine output, 65% of the participants were complaining of polyuria and 5% had oliguria. All the participants were complaining of disturbed sleep. Among 85% of the participants the disease aggravation was noted during *seetha kala* and 15% noted aggravation in the *ushna kala*. In all the participants *agni* was in *mandavastha*. On assessing the *jarana sakti* 90% of the participants were having *avara*



and 10% were having *madhyama jaranasakti*.

Assessment of *Amapachana*

Ama assessment was done based on an *ama* assessment questionnaire which contains ten domains. General *ama* symptoms reduced from 20.4 to 1.09 after the intervention with a mean difference 19.4 (95.1% reduction). This mean difference was found to be statistically significant with $t = 70$, $p < 0.001$. Objective signs of *ama* were reduced from 7.05 to 0.4 after the intervention with a mean difference 6.65 (94.33% reduction). This mean difference was found to be statistically significant with $t = 22.72$, $p < 0.001$. Appetite related symptoms of *ama* were reduced from 31.4 to 1.05 after the intervention with a mean difference 30.35 (96.66% reduction). This mean difference was found to be statistically significant with $t = 32.84$, $p < 0.001$. *Srotas* related symptoms of *ama* were reduced from 1.55 to 0.05 after the intervention with a mean difference 1.5 (96.77% reduction). This mean difference was found to be statistically significant with $t = 8.11$, $p < 0.001$. Bowel related symptoms of *ama* were reduced from 10.15 to 0.95 after the intervention with a mean difference 9.2 (90.64% reduction). This mean difference was found to be statistically significant with

$t = 20.41$, $p < 0.001$. Urine related symptoms of *ama* were reduced from 3.5 to 1.25 after the intervention with a mean difference 2.25 (64.29% reduction). This mean difference was found to be statistically significant with $t = 4.79$, $p < 0.001$. Sweat related symptoms of *ama* were reduced from 1.6 to 0.1 after the intervention with a mean difference 1.5 (93.75% reduction). This mean difference was found to be statistically significant with $t = 7.55$, $p < 0.001$. *Indriya* related symptoms of *ama* were reduced from 1.65 to 0.0 after the intervention with a mean difference 1.65 (100% reduction). This mean difference was found to be statistically significant with $t = 8.43$, $p < 0.001$. Psychological symptoms of *ama* were reduced from 3.9 to 0.15 after the intervention with a mean difference 3.75 (96.15% reduction). This mean difference was found to be statistically significant with $t = 37.75$, $p < 0.001$. *Upasayanupasaya* related symptoms of *ama* were reduced from 9.6 to 1.8 after the intervention with a mean difference 7.8 (81.25% reduction). This mean difference was found to be statistically significant with $t = 24.28$, $p < 0.001$.

Overall symptoms of *ama* were reduced from 90.8 to 6.75 after the intervention with a mean difference 84.05 (92.57% reduction). This mean difference was found to be



statistically significant with $t = 75.18$, $p < 0.001$. (Table 2)

Table 2 Effect of intervention on *Ama* symptoms in various domains – Paired ‘t’ test

Domains		Mean	SD	%	‘t’ value	P value
1. General Symptoms	BT	20.4	1.09	95.1	70.47	P<0.001
	AT	1	1.17			
2. Objective Signs	BT	7.05	0.89	94.33	22.72	P<0.001
	AT	0.4	0.82			
3. Appetite Related	BT	31.4	4.2	96.66	32.84	P<0.001
	AT	1.05	2.16			
4. Srotas Related	BT	1.55	0.76	96.77	8.11	P<0.001
	AT	0.05	0.22			
5. Bowel Related	BT	10.15	1.69	90.64	20.41	P<0.001
	AT	0.95	1.19			
6. Urine Related	BT	3.5	1.50	64.29	4.79	P<0.001
	AT	1.25	1.25			
7. Sweat Related	BT	1.6	0.82	93.75	7.55	P<0.001
	AT	0.1	0.45			
8. Indriya Related	BT	1.65	0.87	100	8.43	P<0.001
	AT	0	0			
9. Psychological Related	BT	3.9	0.31	96.15	37.75	P<0.001
	AT	0.15	0.37			
10. Upasayanupasaya Related	BT	9.6	1.23	81.25	24.28	P<0.001
	AT	1.8	1.10			
11. Total Score	BT	90.8	4.90	92.57	75.18	P<0.001
	AT	6.75	3.35			

DISCUSSION

Discussion on Demographic Data

The participants had a mean age of 42.05 years. Maximum frequency i.e., 70% belonging to age group of 41 – 50 years. Previous studies support this age distribution in which 76% participants belonged to age group 30 – 60 where in the present study upper age limit was fixed as 50 years²⁶. In this study 80% participants were females. Community prevalence study shows that female are more sufferers of *amavata* than male and 3:1 is the ratio of occurrence between them²⁶. The participants were from Malappuram, Kozhikode and Kannur

districts and the religion wise distribution was in accordance with the census figures²⁷. Only 5% participants belong to very poor class. The socioeconomic status of the participants suggests that 15% were poor, 30% were in lower middle class and 50% belongs to the middle class. This data does not mean that the disease is not affecting the rich or very rich people, but this represents the economic class who utilise the facility of Ayurveda College OPD.

Distribution according to the symptoms of Amavata The symptom in the inclusion criteria were divided into confirmatory symptoms and associated symptoms.



1. Confirmatory symptoms: The cases were either fresh cases or in an acute exacerbating stage of already known cases. All the typical features of *amavastha* were evident. In RA cases, symptoms include malaise, fatigue, weakness, muscle soreness, low-grade fever, and weight loss²⁸.

2. Associated symptoms: The characteristic excruciating pain like scorpion bite pain was observed in all the participants. *Vairasyam* and *agnidaurbalyam* are the typical expression of an existing *amavastha*. *Nidra viparyayam* shows the severity of the disease condition so that the patient is unable to sleep comfortably during night, but feels sleepy during day time, i.e. altered sleep pattern.

People with these rheumatic complaints may experience more losses in function than people without arthritis in every domain of human activity including work, leisure and social relations²⁹. The observed symptoms in this study is consistent with previous studies³⁰. Cardinal clinical findings of the disease such as pain, swelling, tenderness, morning stiffness, restriction of movements, muscle weakness were observed in all cases of those studies. Loss of appetite, anorexia, weakness, drowsiness, anaemia was observed in more than 50% of cases^{30,31}.

Distribution according to Diet: Diet has a definite role in the pathogenesis of *amavata*. Injudicious intake of more than one type of food which are incompatible as usual in case of fast foods, may give rise every chance of *agnimandya*, *rasadhatudushti* and the further formation of *ama*³².

Distribution according to Appetite: Since the basic reason behind the pathology of *amavata* is *agnimandya* all existing studies support these findings.

Distribution according to the desired rasa: There is a usual practice of taking pickles along with easily digestible diets like *kanji* during the most commonly seen *mandagni* stage, i.e. *Jwara*. *Katu* is helping in *deepana*, *pachana* and *ruchya*; causes *soshana* of *sneha*, *meda* and *kleda*. It clears the obstruction in channels and it is *kaphahara*³³. There is a universal principle of the liking towards the opposite *rasa*, *guna* etc when one *dosha* is getting vitiated³⁴. Here the participants are having desire towards the *rasa* which is having the opposite property of *ama*¹³. Tastelessness was a common feature observed in all the participants. Since *amla* is *hridya* and *ruchya*, this may be the reason behind the desire towards this *rasa*. It is *agnideepana*, *pachana*, *ushna veerya*, *preenana*, *laghu* and *mudha vatanulomana*³⁵.



Distribution according to Bowel habit:

Vidvibandhata is a classical symptom of *amavata* and *malasanga* is seen in *amavastha*⁴.

Distribution according to Micturition:

Bahu mutrata is one among the associated symptoms. *Bahu picchilata* is mentioned among the quality of *ama*³⁶. The basic cause is the increase of *apyamsa* which leads to *kledavridhi*³⁷. The function of *mutra* is *kledavahana*³⁸. This may be the reason for the observed *Bahu mutrata* in the participants.

Distribution according to Sleep Pattern:

All the participants were complaining of disturbed sleep. *Nidra viparyayam* was included as a confirmatory symptom. Similar observation was noted in previous studies³⁹. Since the term *Nidra viparyaya* is mentioned it gives a clue about the particular sleep pattern, where the patient feels sleepy during day time and disturbed sleep at night⁴⁰.

Distribution according to Kshanadi Kala:

Among the whole participants' disease aggravation is more in *seetha* when compared to that of *ushnakala*. *Rituvashmya* is a given reason for the sluggish *agni* and formation of *ama*⁴¹.

Distribution according to Anala: All the participants *agni* was in *mandavastha*. This

may lead to the impaired formation of the first *dhatu*³. This faulty formed *rasa dhatu* known as *ama* is the basic element in the pathology of the present disease¹³. *Mandagni* is mentioned as the basic cause of all disease which may manifest as different disease as per the site of the pathogenesis².

Distribution according to Jarana sakti and Abhyavaharna sakti:

Jarana sakti may be sluggish since the *mandagni* leading to the accumulation of *kleda* which is the resultant product of undigested faulty formed unripe materials known as *ama*⁴²⁻⁴. The natural remedy to overcome this stage is *apatarpana* and body seeks this technique as a self correction method⁴⁵. Since the person having *ama udgara* like after the just finished meals, he may not feel to take food⁴⁶. Heaviness, nausea etc are also hindering factors to administer food³⁶.

Evaluation of the Amapachana effect of Panchcakolasiddha Yavagu

The objective in the study was the evaluation of *amapachana* effect of *panchcakolasiddha yavagu*. This was assessed based on an *amanirama* assessment questionnaire⁴⁷. It contains ten domains and all domains assessed statistically.

1. General symptoms: This domain of the questionnaire contains questions related with the general *ama* symptoms like feeling



tired, feeling feverish, heaviness of the body, pain all over the body etc. As a result of the controlled fasting with the administration of only diet, the *panchcakolasiddha yavagu, samyak langhana* may be attained. This may be explained as per the *samyak langhita lakshana*. Previous studies results are in consistent with the observation. A study conducted to develop a relative fasting schedule for *langhana* for the treatment of *amavata* with administering *peyadi* like easily digestible diets, shows statistically significant reduction in mean scores of *sarujasandhisodha, agnimandya, koshtabaddhata* and, *jwara* and *gaurava*¹⁴.

2. Objective Signs: The appearance of skin, swelling, puffiness on face, redness, tenderness etc was assessed. The major objective signs of this disease - inflammatory signs and stiffness are said to be due to accumulation of oedema fluid within inflamed tissues, it is supposed to remove this due to its '*dravasoshaka*' action⁴⁸. Drugs similar to the properties of *panchakola* is found to be effective in reducing the objective signs like tenderness in *amavata* and this action is explained based on the *sothahara* properties of the drug and also due to the *amapachana*

property which thereby helps in curing *srotavarodha*⁴⁹.

3. Appetite related symptoms: On analysing the whole questionnaire this domain was seemed as the heart of the questionnaire. It includes the most important assessment related to the features of digestive fire which is the determining factor to assess the end point of the intervention. This domain contains question related to the appetite, desire to food, preferred *rasa*, aversion to food, nausea – vomiting, excess salivation, attitude towards the favourite food etc. Since *agnimandya* and accumulation of *ama* is the basic cause of *amavata* the mainstay of the therapy lies on *amapachana* (digestion of *ama*) by normalizing the *agni*⁵⁰. *Panchcakolasiddha yavagu* is already known to possess significant results in *agnimandya*⁵¹. Appearance of hunger and thirst is explained as the benefit of *samyak langhana* therapy⁵².

4. Srotas/Mala related symptoms: Excess wax in ear, excess rheum of the eyes, excess coating on tongue and excess snot in nose are assessed under this domain. These are the *indriya malas* which may be more in *sama* stage. In the *lakshana* of *ama* it is given that there will be obstruction of channels – *srotorodha* and accumulation of excess *mala* in *sama* stage⁴. *Jihwalepa* if



observed during *Jihwa pareeksha*, we can infer the possibility of stagnation *ama* in *koshtha*, *agnivikriti* and *Jwara*⁵³. There were highly significant changes which was clinically highly relevant because the absence of these symptoms is a definite criterion to determine the *nirama* stage⁴. *Panchakola* like drugs have *agnivardhaka* property due to their *laghu, ushna*, and *teekshnaguna* and due to these *gunas* they are *amapachana*. Thus these drugs increase *agni*, digest *ama*, removes excessive *kledakakapha*, prevent further production of *ama*, clear *srotavarodha* and transport *pakvadosha* from *sakha* to *koshtha* for removal from the body²⁶. Expulsions of *malas* are explained as *samyaklanghana* benefit⁵².

5. Bowel related symptoms: This domain contains questions regarding daily toileting, nature of stool, stool floating or staying down in water, belching, flatus and its characteristic odour etc. *Vid vibandhata* was one among the confirmatory symptoms in the present study and *malasanga* is on definite symptom^{4,13}. 85 per cent participants had *vidvibandhata*. The questions are framed as per the characteristic features of *sama mala* explained by *Susruta*⁵⁴. The result implies the restoration of *nirama* stage after the given

intervention^{4,54}. The *peya* or *yavagu* is known to have the *malanulomana* property⁵⁵. *Panchakola* is helpful to reduce the abdominal distension, colic and thereby clears the flatulence^{56,57}. The overall effect of *langhana* includes the expulsion of *mala*, lightness to the body, appearance of appetite and thirst etc⁵².

6. Urine related symptoms: The volume of urine passed, appearance, colour, smell and turbidity were assessed before and after the intervention. *Bahumutrata* was one among the confirmatory symptoms. The pathology leading to the *kledavridhhi* and thereby *mutravridhhi* and the *soshana* property of *panchakola* resulting in the symptomatic relief through the breakdown and reversal of the pathogenesis chain is explained^{37,38,58}. Most of the participants had yellowish urine even though the volume was excess. This colour variation can be explained based on the classical references which indicates the yellowish colour and the appearance like the rice water – *tandulodaka*^{53,59}. After the intervention few participants still complained the yellowish appearance even though excess volume came to the normal stage. This may be due to the *ushna-ruksha-teekshna guna* of the *panchakola* which led to the excessive *soshana* of the *kleda* of our body⁴⁸.



7. Sweat related symptoms: The only question in this domain was to assess whether sweating is present as in normal or absent. *Srotorodha* and *malasanga* are explained as the two cardinal symptoms of *ama*¹³. *Malasanga* is one among the *lakshana* of *srotodushti*. In case of *svedavahasrotas* the *sangam* leads to the absence of sweat⁶⁰. In the context of *jwaranidana*, a similar manifestation of *ama* in *koshtha*, the conspicuous absence of *sveda* is there as a result of the obstruction of the *srotas*⁶¹. After reaching the *nirama* stage the *srotorodha* will be cleared, *malapravrutti* will reach to the normal stage and sweating may come back to the normalcy¹³. Sweating is explained in the context of *vigatajwaralakshana*⁶². Here also the basic correction is through the *agnideepana*, *amapachana* and thereby the reversal of the chain of reactions in the pathogenesis.

8. Indriya related symptoms: The questions included are related with the proper functioning of the sense organs, impairment in vision, hearing, taste sensation, and smell. Previously the *mala* accumulation in all these respective *srotas* was assessed. Among these four, all the participants were complaining of the impaired taste sensation, may be because of

the excess coating over the tongue. *Aruchi* is included as the confirmatory symptom as it is one among the cardinal features of both *ama*¹³ and *amavata* and this is supported by existing data²⁶. The mechanism of *aruchi* is the impaired function of *rasanendriya* by vitiated *rasadhatu&bodhakakapha*²⁶. *Arochaka* is a condition in which the *doshadushti* take place both at the level of *jihwa* and *hridaya* and there will be a definite role of the individuals psych too⁶³. *Panchakola* has the *ruchya* property and thereby effective in *arochaka*⁵⁷. While consider the *rasa* of individual drug and as a whole, *panchakola* is *katurasapradhana*. It is already observed that majority of the participants were having liking towards *katu* and *amalarasa*. Both these *rasa* are *ruchya* in nature and helps in *amapachana*³³⁻³⁵. Since the drug is having *srotosodhana* property, naturally the excess coating over the tongue may be cleared and the *rasanendriya* will regain its normal functioning. In *vigatajwaralakshana* a similar condition like the *ama* got digested, normal functioning of sense organs and desire for food are mentioned⁶². Keeness of the sense organs and good taste perception are the *samyak lakshana* of *langhana* therapy pertaining to this domain⁵².



9. Psychological symptoms: Laziness of the participant to do daily activities and the angry feeling against the nearest, even those who consoles him/her was assessed. *Alasyam* – laziness is one among the cardinal features of *amavata*. *Utsaha hani* i.e. inability to do routine activities is also included as a confirmatory symptom. High prevalence of anxiety and depression has been documented in several clinical populations of people with similar multiple joint diseases like RA. Both conditions are associated with increased disease activity and decreased physical function and adherence to medical and non-medical interventions⁶⁴⁻⁶⁷. *Anila mudhata* explained as the symptom of *ama* stage may be considered in a broader platform based upon the functions of *vayu* explained by *Charakacharya*⁶⁸. It gives valuable clues about both the physical and psychological states when there is impairment to the proper functioning of *vata*. The condition *Anila mudhata* can be equated to a state of partial or complete inactivity, a condition of sluggishness of body or mind, a tendency to remain at rest unless external force is applied or a negative property of force⁶⁹. Here the overall therapy may be considered as relative *langhana*. The benefits of *samyaklanghana* include purity of heart,

increase of enthusiasm and loss of stupor or laziness⁵². Absence of exhaustion and delusion, normal functioning of sense organs, absence of discomfort and the normalcy of the mind are also can be considered as the signs of the attainment of the *nirama* stage⁶².

10. Upasayanupasaya related symptoms: The last domain of the questionnaire contains questions to assess the effect of warmth, cold, wind, quality of food either *upasaya* or *anupasaya* in *amavata*. The properties of *ama* as explained in classics are *abhishyanti*, *bahu picchila*, *guru*, similar to *visha* etc^{13,70}. The symptoms of this state are already explained in detail. Here the intervention should consider all these factors. All the participants were feeling good with warmth, feeling discomfort with cold and wind. 90 per cent participants discomfort with sweet, oily and cold foods. Desire for hot things – *Ushna kamitva* – is a cardinal feature of *vata* *vriddhi*⁷¹. Similarly coldness of the body is explained as that of *kapha*⁷². The administered drug *panchakolayavagu* has *laghu*, *ushna*, and *teekshn aguna*. The drugs with these *guna* possess *amapachana* effect and do *kaphahara* and *vatahara karma*. Thus these drugs increase *agni*, digest *ama*, removes excessive *kledakakapha*, prevent



further production of *ama*, clear *srotavarodha* and transport *pakvadosha* from *sakha* to *koshtha*²⁶.

Evaluation based on the total score:

Concluding all the ten domains, total score was assessed. The maximum score was 110. Out of this the mean score before intervention, 90.8 was found to be reduced to 6.75, with a mean difference 84.05, i.e. an overall reduction of 92.57 per cent of the *ama* symptoms. This mean difference was found to be statistically significant with $p < 0.001$. The obtained data suggests that the therapeutic dietary preparation used in the present study, the *Panchcakolasiddha yavagu* is highly effective in bringing *amapachana* in *amavata* patients.

Probable mode of action of *Panchcakolasiddha yavagu* as *amapachanapathyahara*

Langhana promotes *agni* and exhaust *ama* leading in turn to the cessation and reversal of the chain of events in the pathogenesis¹⁴. The fasting gives rest to stomach and other digestive organs which help in improving their functions and digestion of *ama*. *Deepana* helps *agnideepana*, i.e. the fortification of *agni*. *Pachana* helps the digestion of undigested *ama*. *Laghu* imparts *langhana*. *Sveda janana* implies the clearance of *srotorodha*. *Vatanuloma* helps

vata to regain the normal functional state. *Malanulomana* helps the removal of obstruction in any channels and the proper excretion of *pureeshadimala*. *Vastisodhana* clears the *vastidosha*, helps to overcome *bahu mutrata* and the proper *kleda* expulsion from the body. It pacifies *glani*, *daurbalya* and is *balya* which helps the individual to regain the strength. This as a whole helps to attain *amapachana* through different aspects.

Panchakola is *agnideepana* according to the *rasa*, *vipaka* and *veerya*. It is *ruchya*, *sulaghna* and *sleshmahara*⁵⁷. *Panchakolaphanda* shows clinically highly significant results in reducing both the objective and subjective parameters of *agnimandya*⁵¹.

Due to the *samyoga* of the *panchakola* with the *yavagu* the effectiveness may be increased. *Panchakola* has augmenting effect of *agnideepana* according to the *rasa*, *vipaka* and *veerya* and statistically it shows highly significant results in *agnimandya*⁵¹.

CONCLUSION

Panchcakolasiddha yavagu has statistically significant *amapachana* effect in *amavata* when analyzed with the *amanirama* assessment questionnaire. It suggests that it



can be effectively practiced for the initial *langhana* therapy in *amavata*.

ETHICAL COMMITTEE CLEARANCE

The study synopsis along with questionnaire was placed before Institutional Ethics Committee of V.P.S.V Ayurveda College, Kottakkal. After the various levels of scrutiny and subsequent modification based on their recommendations, the final acceptance was gained and Ethical clearance was obtained for the study. Approval no: (IEC/DOC/21/14 dated 27/05/2014).

Informed written consent: This was obtained in document form after being informed regarding the study, they were involved in. Details about the intervention and duration of the study were explained. Those who were willing, the consent obtained from participants, only included in the study. They were given the freedom to quit from the study at any part of it at their own will.

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