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Case Report

EFFECTS OF *DHANYAMLA PARISHEKA* IN THE MANAGEMENT OF *AMAVATA* WITH SPECIAL REFERENCE TO RHEUMATOID ARTHRITIS- A CASE STUDY

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ABSTRACT

Amavata is a disease which possesses a challenge to the physician owing to its apparent chronicity, incurability, complications and morbidity. The pathological factors responsible for the manifestation of the disease are *Ama* and *Vata*. *Ama* is resultant from the derangement of *Agni* (digestive power). The clinical entity of *Amavata* can be correlated with rheumatoid arthritis (RA). The study was carried out in a clinically diagnosed case of *Amavata* (rheumatoid arthritis). The patient was appeared to outpatient department first and then admitted to the *Panchakarma* female ward. Thereafter the patient was treated for 17 days and followed up for one month. At first the patient was given 10 ml of *Dhanyamla* orally, twice a day for subsequent three days. The purpose of oral administration of *Dhanyamla* was to normalize deranged *Agni* (digestive power) as it possesses *Deepana* and *Pachana* actions in the body. Then the patient was given *Dhanyamla Parisheka* (affusion sudation) for 14 days. Ayurvedic pharmacodynamic properties, phytochemicals and bioactivities of the ingredients were also gathered to identify the therapeutic values of *Dhanyamla*. Statistically significant improvement was observed in clinically, functionally and haematologically at the end of the treatment schedule. Oral administration of *Dhanyamla* followed by *Dhanyamla Parisheka* has supposed to be an effective therapeutic regimen in the management of *Amavata*.
Keywords: *Amavata*, Rheumatoid arthritis, *Dhanyamla*, *Deepana*, *Pachana*, *Parisheka*.

INTRODUCTION

In Samhita period (1000 BC to 600 AD) there are no references available on the disease *Amavata*. *Amavata* is explained as a specific disease entity for the first time in Madhava Nidana written by Acharya Madhava (900 A.D)¹. *Ama* and *Vata* are the two major pathological components of *Amavata*. According to Vijayarakshita *Ama* and *Vata* get combined together and this state is known as *Amavata*². If food is not totally digested, it is known as *Ama*³. *Ama* is formed due to impairment of *Kayagni*⁴. *Vata Dosha* becomes unbalanced by indulgence of improper diet and regimen. Then the vitiated *Vata* spreads this *Ama* in the whole body through the *Srotas* (body channels) and gets located in the *Sandhi* (joints) to produce the disease. General clinical features of *Amavata* are *Angamarda* (body aches), *Aruchi* (anorexia), *Trushna* (thirst), *Alasya* (malaise), *Gaurava* (feeling of heaviness in the body), *Apaka* (indigestion) and *Angashunatva* (oedema of the body parts)⁵. When the condition gets exacerbated *Bahusandhi Shotha* (Joint Swelling), *Bahusandhi Shula* (Joint Pain), *Sandhi Stabdhatva* (Joint stiffness) may be presented⁶.

Acharya Chakrapanidatta elaborately describes the principles and line of treatment for *Amavata*⁷. *Langhana* (fasting), *Swedana* (sudation), use of drug of *Tikta* (bitter) and *Katu* (pungent) *Rasa*, *Deepana* drugs (stimulating hunger) are beneficial in the management of *Ama* stage of *Amavata*. In *Nirama* stage *Snehapana* (oleation), *Virechana Karma* (therapeutic purgation) and *Vasti Karma* (enemas) can be performed.

Parisheka is one of the thirteen types of *Swedana* described by Maharshi Charaka⁸. *Parisheka Sweda* (Affusion sudation) is especially prescribed in the diseases where *Vata* is predominant. According to Acharya Sushruta and Vagbhata it can be categorized in to *Drava Sweda* (Liquid sudation)^{9, 10}. In Sushruta Samhita *Dhanyamla* is mentioned as *Vata* alleviating drug which is suitable to use in *Drava Sweda* (Liquid sudation)¹¹.

The outcome of *Amavata* is strikingly similar to the disease rheumatoid arthritis (RA). Rheumatoid arthritis is an autoimmune disease in which the body's immune system mistakenly attacks the joints¹². The cause of rheumatoid arthritis is not yet fully understood. Rheumatoid arthritis typically affects the small joints in hands and the feet. Along

with joint inflammation and pain, many people experience fatigue, loss of appetite and a low-grade fever¹³. Because RA is a systemic disease, it may also affect organs and body systems. In later stage deformities of the joints may results and it leads to restriction of the movements of the joints.

CASE REPORT

A 60 years old female patient approached the outpatient department of Ayurveda Teaching Hospital, Borella, Sri Lanka on 19. 01. 2015. The patient was presented with the complaints of pain and oedema in bilateral knee joints, ankle joints and wrist joints along with morning stiffness for more than one hour. She was absent of fever at the time of admission. The patient was quiet normal before one year and the disease was gradually progressed. Her appetite was impaired due to the disease. The patient was unable to perform her day to day activities. The condition of the patient was become worsened with the activities such as walking, combing hair, rising from the sitting position and after bathing. The symptoms were also aggravated during the morning and evening hours. Patient gets relief in the middle of the day as symptoms are subsided. Detailed history of the disease was taken before getting the diagnosis. There was a related family history. Patient's mother and one sister were already diagnosed clinically as rheumatoid arthritis. Patient was admitted to the *Panchakarma* female ward, Ayurveda Teaching Hospital, Borella, Sri Lanka and kept on a normal diet without any specific restrictions and was advised not to lift any weights.

Examination

General condition- moderate, Vitals: Pulse 70/min, regular, full volume; BP -130/70 mmHg; Temperature- 36.7 C⁰ (oral); Respiratory Rate-16/min.

The nervous system, cardio-vascular system, and respiratory system of the patient were within normal limits clinically. Per abdomen examination was normal.

Loco motor system- On examination there was swelling, warmth and tenderness over bilateral knee joints, bilateral shoulder joints, bilateral wrist joints and the left hip. Manoeuvre of the joints were restricted due to the pain and stiffness. The patient was examined according to Ayurveda as well as modern criteria. Then the disease was diagnosed as *Amavata* (rheumatoid Arthritis) and considered as *Sadhya Vyadhi* (curable disease). Thereafter the treatment plan was initiated.

Intervention

The treatment schedule was planned for 17 days. The patient was subjected to the oral administration of *Dhanyamla* followed by *Parisheka* (affusion sudation) with *Dhanyamla*.

Initially 10 ml of *Dhanyamla* was given orally, twice a day before meal for three consecutive days. The purpose of giving *Dhanyamla* was to normalize the *Agni* (digestive fire) as *Dhanyamla* possesses good *Deepana* and *Pachana* properties. Thereafter the patient was subjected to *Dhanyamla Parisheka* for 14 days continuously. Then the patient was followed up for the period of one month.

Preparation of drugs

The research drug, *Dhanyamla* is mentioned under the *Madya Varga* or *Sandhana Kalpana* in Ayurveda Texts. *Dhanyamla* is a liquid medicament prepared by using fermentation procedure. Depending on the chemical constituent formed, *Sandhana Kalpana* is mainly divided into two viz *Madya* and *Shukta*. Pursuant to the *Rasa* (taste) *Shukta* is of two types viz *Madhura Shukta* (sweet in taste) and *Amla* (sour in taste)¹⁴. *Dhanyamla* is categorized under the *Amla Shukta* as it is sour in taste¹⁵.

The research drug was prepared at the pharmacy of National Hospital of Ayurveda, Borella, Sri Lanka according to the classical guidelines.

1. Preparation of Dhanyamla

Ingredients of Dhanyamla

Ingredients of *Dhanyamla* and their quantities are given below according to the text *Sahasrayoga*, written by *Panditarava*¹⁶ [Table No 01].

Table 1: Ingredients of *Dhanyamla* and their quantities

Sanskrit Name	Botanical Name (Family)	English Name (Sinhala Name)	Part Used	Proportion in Sahasrayoga	Proportion used in the present study
<i>Tandula</i>	<i>Oryza sativa</i> L. (Poaceae)	Rice (Sahal)	Seed	10 <i>Prastha</i> (7680 g)	250g
<i>Pruthuka</i>	Pressed form of <i>Oryza sativa</i> L. (Poaceae)	Rice flakes (Habalapeti)	Pressed Seed	10 <i>Prastha</i> (7680 g)	250 g
<i>Kulattha</i>	<i>Macrotyloma uniflorum</i> (Fabaceae)	Horse gram (Kollu)	Seed	40 <i>Pala</i> (1920 g)	62.5 g
<i>Laja</i>	Puffed form of <i>Oryza sativa</i> L. (Poaceae)	Pop corn (Vee pori)	Puffed Seed	40 <i>Pala</i> (1920 g)	62.5 g
<i>Kangubeeja</i>	<i>Panicum sumatrense</i> Roth ex Roem. & Schult. (Poaceae)	Little millet (Meneri)	Seed	1 <i>Adhaka</i> (3072 g)	50 g
<i>Kodrava</i>	<i>Paspalum scrobiculatum</i> (Poaceae)	Kodo millet (Amu)	Seed	4 <i>Prastha</i> (3072 g)	100g
<i>Nagara</i>	<i>Zingiber officinale</i> Roscoe (Zingiberaceae)	Ginger (Inguru)	Rhizome	2 <i>Prastha</i> (1536 g)	50g
<i>Nimbuka</i>	<i>Citrus aurantifolia</i> (Rutaceae)	Lime (Dehi)	Fruit	2 <i>Adhaka</i> (6144 g)	200 g
<i>Deepyaka</i>	<i>Trachyspermum involucreatum</i> (Roxb.) Maire (Apiaceae)	Carom (Asamodagam)	Seed	8 <i>Kudava</i> (1536 g)	50 g
Water				200 <i>Prastha</i> (153.6 L)	5 L
1 <i>Pala</i> = 48 g, 1 <i>Kudava</i> = 192 g, 1 <i>Prastha</i> = 768 g, 1 <i>Adhaka</i> = 3072 g ¹⁷					

Method of Preparation of Dhanyamla^{18, 19}

5 L of Dhanyamla was prepared on an auspicious day. A large deep earthen pot containing water was kept on hearth and boiled. A foresaid drugs given in Table No 01 were coarsely powdered and made into 9 bundles separately, using clean cloth bags. These bundles were put into the vessel, covered with a lid and heated gently and continuously in moderate fire, up to 30-40 °C temperature for 1 hour for consequent period of 7 days. On eighth day fermented liquid was taken out.

Method of Administration of Dhanyamla Parisheka

The patient was made to apply Sesame oil over the body before performing Dhanyamla Parisheka. Then the patient was made to lie down on the Droni (table). 1.5 L of

Dhanyamla was warmed to body temperature. Dhanyamla was poured at a medium speed and at a height of four Angula (4 inches) above the body, in the morning. The medicine was repeatedly heated during the procedure to maintain the temperature. Dhanyamla Parisheka was done for 45 minutes per day. Fresh Dhanyamla was used on each day to perform Parisheka.

Assessment criteria

The patient was assessed clinically, functionally and haematologically.

Clinical Assessment:

Therapeutic effect was recorded using specially prepared Grading scale which is given below.

Grading of Bahusandhi Shotha (joint swelling)²⁰

Grade	Symptoms
0	No swelling
1	Barely detectable impression when finger is pressed into skin
2	Slight indentation.15 seconds to rebound
3	Deeper indentation.30 seconds to rebound
4	> 30 seconds to rebound

Grading of Bahusandhi Shula (joint pain)

Grade	Symptoms
0	No pain
1	Mild pain (bearable in nature)
2	Moderate pain (appears frequently, but no difficulties in movements)
3	Slight difficulty in joint movements due to pain, remain throughout the day
4	More difficulty in joint movements due to severe pain, disturb sleep and require analgesics

Grading of Sparsha Asahishnuta (tenderness)

Grade	Symptoms
0	No tenderness
1	Subjective experience of tenderness
2	Wincing on face of pressure
3	Wincing on face with withdrawal of affected parts on pressure
4	Resist to touch

Grading of Sandhi Stabdhatta (stiffness time)

Grade	Symptoms
0	No stiffness
1	Stiffness lasting for 5min
2	Stiffness lasting for 5min-2hrs
3	Stiffness lasting for 2hrs- 8hrs
4	Stiffness lasting for >8hrs

Grading of Jvara (fever)

Grade	Symptoms
0	Normal 36.7- 37.2 C°
1	Mild fever 37.3- 37.8 C°
2	Moderate fever 37.9- 39.4 C°
3	High fever 39.5- 40.5 Co
4	Hyperpyrexia > 40.5 C°

Grading of Aruchi (anorexia)

Grade	Symptoms
0	No anorexia
1	Occasional anorexia
2	Intermittent anorexia
3	Often anorexia
4	Always anorexia

Grading of *Angamarda* (body aches)

Grade	Symptoms
0	No body aches
1	Occasional body aches
2	Intermittent body aches
3	Often body aches
4	Always body aches

Grading of *Trushna* (thirst)

Grade	Symptoms
0	No thirst
1	Occasional thirst
2	Intermittent thirst
3	Often thirst
4	Thirst do not quench with drinking water

Functional Assessment:

1. General Functional Capacity

Grade	Symptoms
0	Patient is totally bed ridden
1	Few activities are persisting patient requires an attendant to take care of him/herself
2	Few activities are persisting but patient can take care of him or herself
3	Frequent normal activity despite slight difficulty in joint movement
4	Complete ability to carry on all routine duties

2. Walking Time Index

Grade	Symptoms
0	> 40 sec
1	31- 40 sec
2	21- 30 sec
3	16 - 20 sec
4	0-15 sec

3. Gripping Power

Grade	Symptoms
0	No active range of motion & no palpable muscle contraction
1	No active range of motion & palpable muscle contraction only
2	Reduced active range of motion & no muscle resistance
3	full active range of motion & no muscle resistance
4	full active range of motion & reduced muscle resistance
5	full active range of motion & normal muscle resistance

Haematological Assessment:

The patient was assessed for the following Haematological parameters.

- Haemoglobin (Hb %)
- Total Leucocyte Count (TLC)
- Erythrocyte Sedimentation Rate (ESR)
- Serum Rheumatoid Factor (RF)
- C- Reactive Protein (CRP)

RESULTS

The patient was gradually recovered with the treatment. After the oral administration of *Dhanyamla*, the patient was completely relieved from *Aruchi* (anorexia) and *Angamarda*

(body aches) was reduced. On the eighteenth day after application of *Dhanyamla Parisheka* she was totally relieved of *Bahusandhi Shotha* (joint swelling) and *Sparsha Asahishnuta* (tenderness). The patient got the ability to perform day today activities with the normal range of joint movements. Her ESR, which was initially 53 mm/1st hour, had reduced to 25 mm/1st hour at the follow up. On the 47 day, that is thirty days after completion of treatment, Hb% also increased significantly. Considering the nature of the illness, even though the patient was free from complaints, chances of relapse were considerable.

Therapeutic effect on the clinical features, functional and haematological changes are given in Table No 03, 04 and 05 respectively.

Table 3: Improvement of the Clinical features with the treatment

	Before Treatment	4 th day	18 th day	48 th day (30 th day after completion of the treatment)
<i>Bahusandhi Shota</i> (joint swelling)	4	3	0	0
<i>Bahusandhi Shula</i> (joint pain)	4	4	2	0
<i>Sparsha Asahishnuta</i> (joint tenderness)	3	3	0	0
<i>Sandhi Stabdhatta</i> (stiffness time)	3	3	1	0
<i>Jvara</i> (fever)	0	0	0	0
<i>Angamarda</i> (body aches)	4	3	1	0
<i>Aruchi</i> (anorexia)	4	0	0	0
Quantitative assessment of pain- Visual Analyzing Scale (VAS method)	4	4	1	0

Table 4: Changes in the Functional Ability of the patient with the treatment

	Before Treatment	4 th day	18 th day	48 th day (30 th day after completion of the treatment)
Gripping power	2	2	4	4
Walking time	0	0	2	3
General functional capacity	1	2	3	4

Table 5: Changes of the Haematological factors with the treatment

	Before Treatment	4 th day	18 th day	48 th day (30 th day after completion of the treatment)
Hb (g/ dl)	12.00	12.00	12.05	13. 10
TLC (/ mm ³)	9, 960	9, 960	9, 900	9, 840
Rh Factor (IU/ ml)	8	8	<8	< 8
ESR (mm/ hr)	53.00	51.00	30.00	25.00
CRP (mg/ l)	17. 30	17. 00	14. 30	10.30

Ayurvedic Pharmacodynamic properties of ingredients of Dhanyamla

In Ayurveda point of view the efficacy of drug is due to its pharmacodynamic properties. *Rasa* (taste), *Guna* (attributes), *Veerya*

(potency), *Vipaka* (end product of the digestion), *Doshakarma* (action on body humors) and other properties of *Dhanyamla* are stated in the Table No 06.

Table 6: Ayurvedic pharmacodynamic & other properties of Dhanyamla²¹⁻²⁶

Property	Description
<i>Rasa</i>	<i>Amla</i> (Sour in taste)
<i>Guna</i>	<i>Laghu</i> (easily digestible), <i>Teekshna</i> (penetrating)
<i>Veerya</i>	<i>Ushna</i> (hot in potency)
<i>Vipaka</i>	<i>Amla</i> (sour at the end part of the digestion)
<i>Dosha Karma</i>	<i>Vata & Kapha Dosha Shamaka</i> (pacify <i>Vata & Kapha Dosha</i>), <i>Pitta Kopakara</i> (aggravates <i>Pitta Dosha</i>)
Other properties	<i>Deepana</i> (enhance digestion), <i>Jarana</i> (digestive), <i>Ruchya</i> (increase appetite), <i>Preenana</i> (satiating), <i>Mukha Vairasya Hara</i> (eliminate bad taste of the mouth), <i>Mukha Daurgandha Hara</i> (eliminate bad smell of the mouth), <i>Mukha Malahara</i> (eliminate dirty in the mouth), <i>Bhedi</i> (purgative), <i>Vibandhaghna</i> (laxative), <i>Hrudya</i> (good to the heart), <i>Jeevana</i> (sustainer of life), <i>Harshana</i> (exhilarating), <i>Jvara Hara</i> (febrifuge), <i>Shosha Hara</i> (eliminate dryness), <i>Shrama Hara</i> (relieve fatigue), <i>Klama Hara</i> (relieve exhaustion), <i>Sparsha Sheetala</i> (cold to touch), <i>Daha Nashana</i> (mitigate burning sensation), <i>Thrushna Hara</i> (mitigate thirst), <i>Vasti Shula Hara</i> (cures pain in the urinary bladder)

Phytochemicals of the ingredients of Dhanyamla
Herbs are naturally containing various phytochemicals. Isolated different phytochemicals from the ingredients of

Dhanyamla by various researches are given below. [Table No 07]

Table 7: Phytochemicals of the ingredients of *Dhanyamla*²⁷⁻³⁹

Ingredient	Phytochemicals containing
<i>Tandula (Oryza sativa)</i>	Starch, Globulin, Albumin, Oryzagenin, Vitamin B, Trigonelline, Trigonelline
<i>Kulattha (Macrotyloma uniflorum)</i>	Falvonoides, Urease, Glycosides, Lenoleic acid, Polyphenols, Beta Sitosterol, Amino acids- glycine, alanine, cysteine, serine, Isoflavones Genistein, Isoferririn, Cumesterol, Psoralidin, Galactosidase, Glucosides, Streptogenin
<i>Kangubeeja (Panicum sumatrense)</i>	Alkaloid, Protein, Fat, Minerals, Crude fibers
<i>Kodrava (Paspalum scrobiculatum)</i>	Phenol, Tannins, Alkaloids, Falvonoides, Saponins
<i>Nagara (Zingiber officinale)</i>	Zingerone, Shogaol, Camphene, Phellandrene, Zingiberene, Cineol, Borneol, Gingerol, Gingerin, Resins, Geraniol
<i>Nimbuka (Citrus aurantifolia)</i>	Citric acid, Malic acid, Phosphoric acid, Volatile oil, Hesperidin
<i>Deepyaka (Trachyspermum involucratum)</i>	Volatile oil, Phellandrene, Thymol, p- cymol

Bioactivities of the ingredients of *Dhanyamla*: Herbal ingredients possess different bioactivities. Scientifically

proven bioactivities of the ingredients of *Dhanyamla* are given in the following table. [Table No 08]

Table 8: Scientifically proven Bioactivities of the ingredients of *Dhanyamla*^{40- 47}

Ingredient	Bioactivities
<i>Tandula (Oryza sativa)</i>	Anti-inflammatory
<i>Kulattha (Macrotyloma uniflorum)</i>	Anti-hyperglycemic, Anti-adipogenic, Anti hyperlipidaemic
<i>Kangubeeja (Panicum sumatrense)</i>	Analgesic, Cytotoxic, Antioxidant, Hypoglycemic
<i>Kodrava (Paspalum scrobiculatum)</i>	Antibacterial, Antitoxic, Anti-inflammatory, Antioxidant
<i>Nagara (Zingiber officinale)</i>	Anti-inflammatory, Analgesic, Hypoglycemic, Anti hyperlipidaemic, Antioxidant
<i>Nimbuka (Citrus aurantifolia)</i>	Antioxidant, Antiplatelet
<i>Deepyaka (Trachyspermum involucratum)</i>	Anti hyperlipidemic, Anti-inflammatory, Analgesic, Antipyretic

DISCUSSION

Amavata is a disease mainly due to the indigestion of food resulting *Ama*. *Dhanyamla* is having *Laghu Guna* (light) and easy to digest. The predominant *Rasa* of *Dhanyamla* is *Amla Rasa* (sour taste). Therefore *Dhanyamla* is capable in enhancing *Agni* (digestive power) and digests the *Amarasa*. In addition to that *Deepana*, *Jarana* and *Rochana* properties of *Dhanyamla* helps to digest the *Ama* and enhances the appetite. By oral administration of *Dhanyamla* the pathogenesis of *Amavata* can be drawn as it eliminates the *Ama*.

Amavata is mostly resultants owing to vitiation of *Vata* and *Kapha Dosha*. In *Amavata Chikitsa Sutra* (treatment schedule), it is advised to prescribe *Ruksha Sweda*^{48, 49}. *Dhanyamla* is having *Laghu* and *Teekshna* properties. Therefore *Dhanyamla Parisheka* is a kind of *Ruksha Sweda*. These properties mitigate both vitiated *Kapha* and *Vata Doshas*.

Sweda Karma also removes *Shula* (pain), *Stambha* (stiffness), *Gaurava* (heaviness) and *Sheetata* (coldness) of the body⁵⁰. It promotes *Vayu Niyamana* (proper functioning of *Vata Dosha*), *Gatra Vinamana* (body movements), *Sroto Shuddhi* (clearance of boy channels) and *Sandhi Cheshta* (movements of the joints)⁵¹.

Ushna Veerya property of *Dhanyamla* possesses the contradictory properties to that of leading factors of *Amavata* viz *Vata* and *Kapha Dosha*. *Dhanyamla* is having some attributes which may act on the *Asthi Sandhi* (Loco motor

system) and *Vatavaha Srotas* (Nervous system) such as *Vatanulomana*, *Shula Prashamana*, *Vedana Sthapana* and *Sheeta Prashamana*. These properties may help to minimize the clinical features of *Amavata*.

Jeevana, *Bala Prada*, *Veerya Prada*, *Shramahara* and *Klamahara* properties of *Dhanyamla* also boost the consequence of the patient.

As *Amavata* is an inflammatory condition, anti inflammatory action of glucosides (Hesperidin) in the ingredients of *Dhanyamla* may beneficial with its action. Flavonoides are having good antioxidant property and eliminate the free radicals. Analgesics actions of *Dhanyamla* may helps to reduce the symptoms.

CONCLUSION

Some clinical features of the patient viz *Angamarda* (body aches) and *Aruchi* (anorexia) was reduced by oral administration of *Dhanyamla*. Significant improvement of *Bahusandhi Shula* (joint pain), *Bahusandhi Shotha* (joint swelling), *Sparsha Asahishnuta* (joint tenderness) and *Sandhi Stabdhatta* (joint stiffness) has been noticed by the administration of *Dhanyamla Parisheka* (affusion sudation). End of the treatment schedule, the range of joint movements were also increased. Therefore this case highlights the fact that the disease *Amavata* can be effectively managed with the internal application of *Dhanyamla* followed by external application. Further clinical studies should be conducted to validate the treatment principles applied in this case.

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