

A PHARMACOLOGICAL APPRAISAL OF DHANYAMLA

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ABSTRACT

The term “*Dhanyamla*” is comprised of two discrete words, viz ‘*Dhanya*’ and ‘*Amla*’ which gives an extensive meaning of ‘fermented cereal’. *Dhanyamla* has a great therapeutic value. It is widely used in India but not in Sri Lanka. This effort is to evaluate the properties of *Dhanyamla* and to make physicians familiar with its benefits. Data were collected from the authentic Ayurveda texts and electronic sources. According to Sahasra Yoga, *Tandula* (*Oryza sativa*), *Pruthuka* (Pressed form of *Oryza sativa*), *Kulattha* (*Macrotyloma uniflorum*), *Laja* (Puffed form of *Oryza sativa*), *Kangubeeja* (*Panicum sumatrense*) *Kodrava* (*Paspalum scrobiculatum*), *Nagara* (*Zingiber officinale*), *Nimbuka* (*Citrus aurantifolia*), *Deepyaka* (*Trachyspermum involucreatum*) and water are fermented to make *Dhanyamla*. According to Ayurveda, *Dhanyamla* has properties of *Amla Rasa*; *Laghu*, *Teekshna* and *Snigdha Guna*; *Ushna Veerya* and *Amla Vipaka*. *Dhanyamla* can be applied internally and externally. Oral administration of *Dhanyamla* enhances appetite and digestive power. It is used in *Asthapana Vasti* and *Virechana* in *Panchakarma* therapy to obtain *Lekhana* effects. Externally it is used in *Parisheka Sweda*, *Nadi Sweda*, *Avagaha Sweda*, *Shiro Dhara*, *Shiro Vasti* and *Alepa*. Using *Dhanyamla* is beneficial in *Amavata*, *Urustambha*, *Arshas*, *Vruddhi*, *Athisthaulya*, *Rajayakshma*, *Prathishyaya*, *Vidradhi*, *Daha*, *Peenasa* and *Jvara*. It is concluded that *Dhanyamla* is a medicine which can be used as multifaceted treatment.

Key words: *Dhanyamla*, *Panchakarma*, *Amavata*, *Sandhana Kalpana*, Fermented cereal, Digestive power

INTRODUCTION

Ayurvedic pharmaceuticals are formulated through the transference of active ingredients by different manufacturing processes. *Sandhana Kalpana* is one of the best pharmaceutical preparations in Ayurveda practice since ancient time. [1] The term *Sandhana* is used to denote fermentation process. *Sandhana Kalpana* is a unique form in which acidic and alcoholic fermented formulations are prepared. [2] In order to prepare these medicaments, liquids mixed along with drugs are kept on certain conditions to take place fermentation. In these preparations acid is produce

predominantly and their taste is mainly sour. Thus, these formulations may have longer shelf life, quick absorption and action and excellent therapeutic efficacy as compared to other Ayurvedic herbal medicines. [3] On the basis of alcoholic or acidic nature under *Madya* group *Asava*, *Arishta*, *Sura*, *Varuni*, *Sidhu* and under *Shukta* group *Sauveeraka*, *Tushodaka*, *Aranala* and *Dhanyamla* are included. [4] Though *Dhanyamla* has a great importance as a medicament it is not abundantly used by the physicians in Sri Lanka. This attempt is to explore the properties of *Dhanyamla*

and to make physicians familiar with the benefits of it.

MATERIALS & METHODS

The formula of *Dhanyamla* is taken from the Ayurveda text *Sahasra Yoga*, written by Panditarava. Related data were collected from authentic Ayurveda texts, scientific journals and web sources. Then the data were analysed.

RESULTS

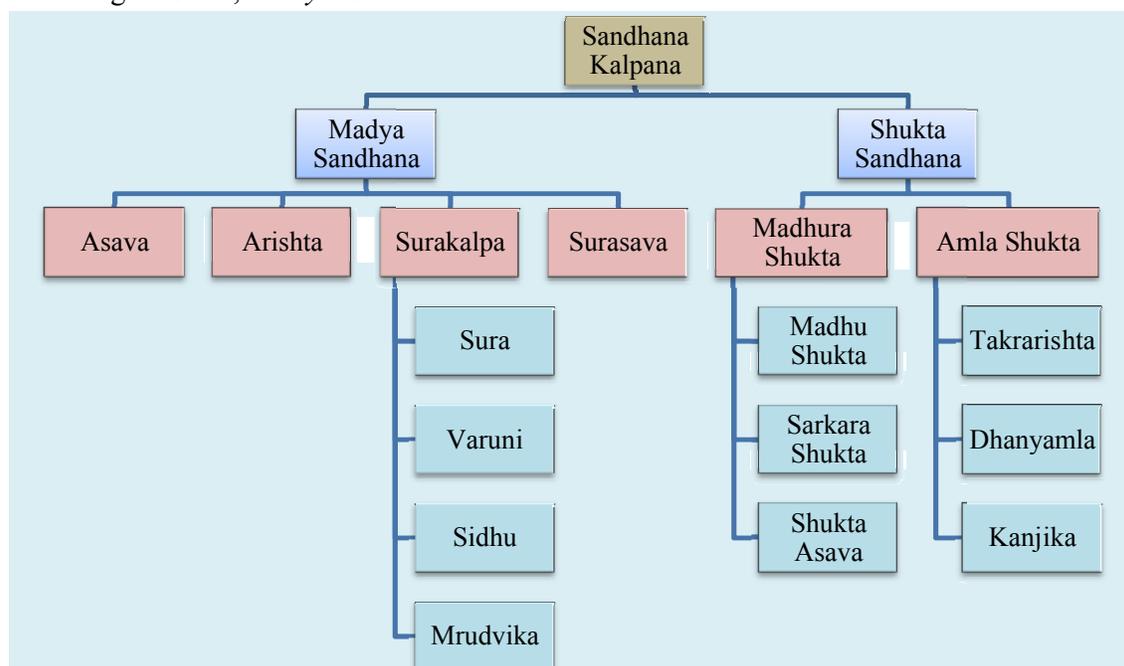
Classification of *Sandhana Kalpana*

Based on the final outcome of the *Sandhana Kalpana*, it is mainly divided in to two categories viz, *Madya Sandhana* and

Shukta Sandhana. Classification of *Sandhana Kalpana* is given in Figure 01.

Dhanyamla is classified under the *Amla Shukta*. In *Shukta* preparations acid is produced predominantly instead of alcohol; hence their taste is mainly sour. Most of the ingredients of *Dhanyamla* are having *Madhura Rasa* (sweet taste). By the fermentation procedure *Madhura Rasa* (sweet taste) of these ingredients is converted into *Amla Rasa* (sour taste).

Figure 01: Classification of *Sandhana Kalpana* ^[5]



Synonyms of *Dhanyamla*:

Compilations of synonyms have been expressed towards *Dhanyamla* in Authentic Ayurveda texts. 'Guna deepika', a renowned resource book on medical plants gives the synonyms for *Dhanyamla* such as *Souveeraka*, *Avantisoma*, *Abhishuta*, *Dhanyamla*, *Kunjala*, *Kulmasha* and *Aranala*.^[6] Considering the geographical factors *Dhanyamla* is known as *Souveeraka* and *Avantisoma*. It is called as *Souveeraka* as it is available in *Souveera Desha*. It is prepared out of 'soma' a kind

of cereal which is found in *Avanti Desha*. Hence it is called *Avantisoma*. In connection with process of fermentation it has been named as *Abhishuta*, *Dhanyamla*, *Kunjala* and *Kulmasha*. *Dhanyamla* usually made of half cooked cereals. So it is named as *Abhishuta*. It is called *Kulmasha* as it is having half cooked 'Masha' or black gram (*Vigna mungo*). It is a kind of fermented water so called *Kunjala*. It is called *Aranala* as it is having acidic odour.

Usage of the terms *Aranala*, *Kanjika* and *Dhanyamla* in Authentic Texts

The term *Dhanyamla* or *Kanjika* is mentioned under the *Madya Varga* in *Vruhat thrayee*.^{[7], [8], [9]} In Sushruta Samhita and Charaka Samhita *Dhanyamla* is also included in *Amla varga*.^{[10], [11]} Chakradatta has not described the word *Dhanyamla*. Acharya Charaka and Chakradatta have used the words *Kanjika* and *Aranala* synonymously. But Acharya Vagbhata and Bhavamishra have described *Aranala*, *Kanjika* and *Dhanyamla* as different

preparations. Narisimha has explained ‘*Dhanyamla*’ and ‘*Kanjika*’ are complementary to each other and no different present in these two. Usage of the terms *Aranala*, *Kanjika* and *Dhanyamla* according to the different texts is given in Table No: 01.

Table No 01: Usage of the terms *Aranala*, *Kanjika* and *Dhanyamla* in Authentic Texts

| Term | CS | SS | AH | AS | Sh S | BP | CD |
|------------------|----|----|----|----|------|----|----|
| <i>Aranala</i> | + | | + | | | + | + |
| <i>Kanjika</i> | + | | + | | + | + | + |
| <i>Dhanyamla</i> | + | + | + | + | | + | |

CS- Charaka Samhita, SS- Sushruta Samhita, AH- Ashtanga Hrudaya Samhita, AS- Ashtanga Samgraha, Sh S - Sharangadhara Samhita, BP- Bhava Prakasha, CD- Chakradatta

Different formulas for preparation of *Dhanyamla*

Several recipes of preparing *Dhanyamla* have been found in authentic texts.

According to Sushruta *Dhanyamla* is prepared by *Dhanya* (cereals such as *Oryza sativa*; Rice, *Hordeum vulgare*; Barley)).^[12] Acharya Vagbhata mentioned that *Dhanyamla* is prepared by fermenting the water in which rice and such other grains and pulses have been slightly cooked or merely washed.^[13] In the view of Bhava Mishra it is prepared by fermenting *Shali churna* (crushed *Oryza sativa*; Rice) and *Kodrava* (*Paspalum scrobiculatum*; Kodo millet).^[14] According to the Sharangadhara

Samhita fermented liquid prepared with *Manda* (Gruel) of half boiled *Kulmasha* (*Vigna mungo*; Black gram) and *Dhanya* (such as *Oryza sativa*; Rice, *Hordeum vulgare*; Barley) is *Kanjika*.^[15]

Ingredients of *Dhanyamla*

Sahasra Yoga, written by Panditarava precisely describes the formula of *Dhanyamla*. Although recent authors and researches have been followed the formula of Sahasra Yoga there are some variations in the quantity. Ingredients of *Dhanyamla* and their quantities according to different authors are given below. [Table No 02]

Table No 02: Ingredients of *Dhanyamla* and quantities

| Sanskrit Name | Botanical Name (Family) | English Name (Sinhala Name) | Part Using | Proportion | | |
|-----------------|--------------------------------------------------|-----------------------------|--------------|--------------------|--------------------|-------|
| | | | | SY | SYM | CS |
| <i>Tandula</i> | <i>Oryza sativa</i> L. (Poaceae) | Rice (Sahal) | Seed | 10Prastha (7680 g) | 10Prastha (7680 g) | 13.5L |
| <i>Pruthuka</i> | Pressed form of <i>Oryza sativa</i> L. (Poaceae) | Rice flakes (Habalapeti) | Pressed Seed | 10Prastha (7680 g) | 10Prastha (7680 g) | 13.5L |
| <i>Kulattha</i> | <i>Macrotyloma uniflorum</i> (Lam.) Verdc. | Horse gram (Kollu) | Seed | 40 Pala (1920 g) | 10Prastha (7680 g) | 13.5L |

| | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------|-------------|------------------------------|------------------------------|-------|
| | (Fabaceae) | | | | | |
| Laja | Puffed form of <i>Oryza sativa</i> (Poaceae) | Pop corn (Vee pori) | Puffed Seed | 40 <i>Pala</i> (1920 g) | 4 <i>Prastha</i> (3072 g) | 55L |
| Kangubeeja | <i>Panicum sumatrense</i> Roth ex Roem. &Schult. (Poaceae) | Little millet (Meneri) | Seed | 1 <i>Adhaka</i> (3072 g) | 1 <i>Adhaka</i> (3072 g) | 5.5L |
| Kodrava | <i>Paspalum scrobiculatum</i> L. (Poaceae) | Kodo millet (Amu) | Seed | 4 <i>Prastha</i> (3072 g) | 4 <i>Prastha</i> (3072 g) | 5.5L |
| Nagara | <i>Zingiber officinale</i> Roscoe (Zingiberaceae) | Ginger (Ingeru) | Rhizome | 2 <i>Prastha</i> (1536 g) | 2 <i>Prastha</i> (1536 g) | 3.0 L |
| Nimbuka | <i>Citrus aurantiifolia</i> (Christm. & Panzer) Swingle (Rutaceae) | Lime (Dehi) | Fruit | 2 <i>Adhaka</i> (6144 g) | 4 <i>Prastha</i> (3072 g) | 5.5L |
| Deepyaka | <i>Trachyspermum involucreatum</i> (Roxb.) Maire (Apiaceae) | Carom (Asamodagam) | Seed | 8 <i>Kudava</i> (1536 g) | 8 <i>Kudava</i> (1536 g) | 3.0 L |
| Water | | | | 200 <i>Prastha</i> (153.6 L) | 200 <i>Prastha</i> (153.6 L) | 270 L |
| SY- Sahasrayoga,^[16] SYM- Sahasrayogam,^[17] CS- Chikitsa Samgraha,^[18] 1 Pala = 48 g, 1 Kudava = 192 g, 1 Prastha = 768 g, 1 Adhaka = 3072 g^[19] | | | | | | |

Recently a research had been done by Ol-lakkod S. et al following the formula of Sahasra Yoga. Researchers have taken above ingredients in the proportions of 5, 5, 5, 20, 4, 2, 1, 4, 2 and 100 respectively.^[20]

Method of preparation of Dhanyamla:

The preparation procedure is done by two steps.

Step 1: Preparation of the Ingredients

It is advised to prepare *Dhanyamla* on an auspicious day. A large deep earthen pot should be kept on an oven. Water should be added and boiled. A foresaid drugs

listed in table No 02 should be coarsely powdered. These drugs are made into 9 bundles separately, using clean and cotton cloth. These bundles should be put into the vessel containing the boiled water and the lid has to be loosely covered. The mixture is then kept for the fermentation.

Step 2: Procedure of fermentation

Method I: In accordance with the text Sahasra Yoga^[16] and Chikitsa Samgraha the vessel containing boiled water and bundles should be heated gently in moderate fire for a period of seven consequent days. On the 8th day the required quantity of the

liquid should be taken out. Same quantity of hot water should be added to the pot. This method is most suitable to prepare *Dhanyamla* in cold weather or *Anupa Desha*.

Method II: In Summer season or in *Jangala Desha* afore prepared preparation should be heated gently for one hour on moderate fire. Then it should be removed from fire, seal well and kept for a period of seven days.

Method III: According to the experience of some researchers, all the ingredients are boiled with water for one day. Then the vessel is covered and kept for seven days.

Method IV: In Sri Lanka there are no such seasonal changes throughout the year. Therefore for the ongoing research on *Amavata*, the authors have been followed the method which is described in *Sahasra Yoga* with some variations. The vessel was heated up to 30-40 C⁰ temperature for

1 hour per day for consequent period of seven days. On 8th day fermented liquid was taken out. In this method *Dhanyamla* could be prepared in room temperature (30 C⁰) without any physical changes.

Shelf life of Dhanyamla

Dhanyamla can be preserved for 6 months without harming its potency. [21]

Ayurvedic Pharmacodynamic Properties of Ingredients of Dhanyamla

Ingredients of *Dhanyamla* have various properties which are able to mitigate vitiated *Dosha* (body humours). *Rasa* (taste), *Guna* (attributes), *Veerya* (potency), *Vipaka* (end product of the digestion) and *Doshakarma* (action on body humours) of these ingredients are described in Table No 03.

Table No 03: Ayurvedic Pharmacodynamic Properties of Ingredients of Dhanyamla [22] - [34]

| Ingredient | Rasa | Guna | Veerya | Vipaka | Dosha Karma | Other properties |
|-------------------|------------------|--------------------------------|--------|---------|--------------------|---------------------------------------------------------------------------------------------|
| Tandula | Madhura, Kashaya | Guru | Sheeta | Madhura | Vata Shamaka | Vrushya, Mutrala, Rochana, Jvaraghna, Deepana |
| Pruthuka | Madhura | Guru | Ushna | Madhura | Vata Shamaka | Vrushya, Mutrala, Rochana, Jvaraghna, Deepana |
| Kulattha | Kashaya, Madhura | Laghu, Ruksha, Teekshna, Ushna | Ushna | Katu | Kapha Vata Shamaka | Shotha hara, Swedavarodhaka, Vidahi, Anulomana, Jvaraghna, Mutrala, Lekhana, Shukra Nashaka |
| Laja | Madhura | Laghu | Sheeta | Ushna | Vata Shamaka | Vrushya, Mutrala, Rochana, Jvaraghna, Deepana |
| Kangubeeja | Madhura, Kashaya | Laghu | Ushna | Madhura | Vata Kapha Shamaka | Vedana Sthapana, Balya, Vatanulomana, Vrana Ropana |
| Kodrava | Madhura, | Laghu, | Sheeta | Katu | Kapha, | Vedana Sthapana, |

| | | | | | | |
|-----------------|-----------------------------|--------------------------------|----------------|----------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <i>Kashaya, Katu, Tikta</i> | <i>Ruksha</i> | | | <i>Pitta Shamaka</i> | <i>Grahi, Vishaghna, Lekhana, Rakta Shodhana, Mutrala, Rochana</i> |
| Nagara | <i>Katu</i> | <i>Laghu, Snigdha</i> | <i>Ushna</i> | <i>Madhura</i> | <i>Vata Kapha Shamaka</i> | <i>Shothahara, Vedana Sthapana, Sheeta Prashamana, Nadi Uttejaka, Deepana, Pachana, Rochana, Vatanulomana, Shula Prashamana, Jvaraghna, Rakta Shodhana, Vrushya, Balya</i> |
| Nimbuka | <i>Amla</i> | <i>Laghu</i> | <i>Anushna</i> | <i>Madhura</i> | <i>Kapha Vata Shamaka</i> | <i>Rochana, Deepana, Pachana, Vatanulomana, Pitta Saraka, Rakta Shodhaka, Hrudya, Swedajanaka, Jvaraghna, Mutrala</i> |
| Deepyaka | <i>Katu, Tikta</i> | <i>Laghu, Ruksha, Teekshna</i> | <i>Ushna</i> | <i>Katu</i> | <i>Kapha Vata Shamaka</i> | <i>Vedana Sthapana, Nadi Balakaraka, Shotha Nashaka, Mutrala, Katupaushtika, Hrudya Uttejaka, Mashtishka Balakaraka, Vatanulomana, Deepana, Pachana, Shula Prashamana</i> |

Properties of Dhanyamla according to the Ayurveda Classical texts

The attributes and actions of *Dhanyamla* are described in Ayurveda Classical texts as given in table No 04.

Table No 04: Properties of Dhanyamla according to the Ayurveda Classical texts

| Property | CS | SS | AH | AS | BP |
|-----------------------------------------------------------|----|----|----|----|----|
| <i>Jeevana (sustainer of life)</i> | | + | | | |
| <i>Daha Nashana (mitigate burning sensation)</i> | + | + | | | |
| <i>Vata Kapha Nashaka (pacify Vata & Kapha Dosha)</i> | + | + | + | + | + |
| <i>Thrushna Hara (mitigate thirst)</i> | | + | | | |
| <i>Laghu (easily digestable)</i> | + | + | + | + | + |
| <i>Teekshna (penetrating)</i> | | + | + | + | + |

| | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| Deepana (enhance digestion) | + | + | | + | + |
| Jarana (digestive) | + | + | | | |
| Mukha Vairasya Hara (eliminate bad taste of the mouth) | | + | | | |
| Mukha Daurgandha Hara (eliminate bad smell of the mouth) | | + | | | |
| Mukha Malahara (eliminate dirt in the mouth) | | + | | | |
| Shoshahara (eliminate dryness) | | + | | | |
| Bhedi (purgative) | + | + | + | + | + |
| Vibandhaghna (laxative) | + | | | | |
| Shramahara (relieve fatigue) | | | + | + | |
| Klamahara (relieve exhaustion) | + | + | + | + | |
| Ruchya (increase appetite) | + | + | + | + | + |
| Ushna (hot in potency) | | + | + | + | + |
| Pittakrut (aggravates Pitta Dosha) | | | + | | |
| Sparsha Sheetala (cold to touch) | | | + | + | |
| Vasti Shulahara (cures pain in the urinary bladder) | | | + | + | |
| Hrudya (good to the heart) | | + | + | + | |
| Preenana (satiating) | + | | | | + |
| Harshana (exhilarating) | + | | | | |
| Jvara Hara (febrifuge) | + | | | | |
| CS- Charaka Samhita, ^[35] SS- Sushruta Samhita, ^[36] AH- Ashtanga Hrudaya Samhita, ^[37] AS- Ashtanga Samgraha, ^[38] BP- Bhava Prakasha ^[39] | | | | | |

Properties of Madya Varga according to Ayurveda texts

Dhanyamla is described under the Madya Varga in Ayurveda texts. Apart from the properties of each group of Madya, common description about the properties of

Madya Varga is also available in these texts. Therefore these properties would also be applicable to Dhanyamla. Properties of Madya Varga are given in the following table. [Table No 05]

Table No 05: Properties of Madya Varga

| Property | CS | SS | AH | AS | BP |
|--------------------------------------------------------|----|----|----|----|----|
| Thushtidam (promotes contentment) | + | | + | + | |
| Pushtidam (promotes nourishment) | + | | + | + | |
| Pratibhakaruth (confer good intelligence) | + | | + | + | |
| Sroto Vishodhanam (cleaning body channels) | + | | + | + | |
| Bala Pradam (strengthening) | + | | | | |
| Amrutam (works as an elixir) | + | | | | |
| Bhaya Shoka Paham (eliminates fear & grief) | + | | | | |
| Veerya Pradam (promotes confidence) | + | | | | |

| | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|---|---|---|
| Swadu, Tikta, Katu in Rasa (sweet, bitter & pungent in taste) | | | + | + | |
| Katu Vipaka (sour at the end of the digestion) | | | + | + | |
| Svarakruth (confer good voice) | | | + | + | |
| Arogyakruth (confer good health) | | | + | + | |
| Varnakruth (confer good colour & complexion) | | | + | + | |
| Nashta Nidra Hitham (suitable for those having loss of sleep) | | | + | + | |
| Ati Nidra Hitham (suitable for those having excess sleep) | | | + | + | |
| Krusha Sthula Hitham (suitable for both lean & stout persons) | | | + | + | |
| Sukshma (entering through minute pores) | | + | + | + | + |
| Ashukari (quickly in action) | | | | | + |
| Vishada (viscid) | | | | | + |
| Vikashi (produce looseness of joints) | | + | | | + |
| Vyavayi (spreads quickly) | | | | | + |
| CS- Charaka Samhita, ^[40] SS- Sushruta Samhita, ^[41] AH- Ashtanga Hrudaya Samhita, ^[42] AS- Ashtanga Samgraha, ^[43] BP- Bhava Prakasha ^[44] | | | | | |

Methods of administration of Dhanyamla

Dhanyamla can be administered both internally and externally in different methods as given in Table No 06.

Table No 06: Methods of administration of Dhanyamla

| Mode of administration | | CS | SS | AH | AS | BP | PT |
|------------------------|---------------------------------------------|----|----|----|----|----|----|
| Internal | <i>Pana</i> (Drinking) | + | + | + | + | + | |
| External | <i>Avagaha Sweda</i> (Tub fomentation) | + | + | | | | |
| | <i>Parisheka Sweda</i> (Shower fomentation) | + | + | | | | |
| | <i>Nadi Sweda</i> (Pipe fomentation) | + | | | | | |
| | <i>Upanaha Sweda</i> (Poultice) | | + | | | | |
| | <i>Alepa</i> (Paste) | | + | | | | |
| | <i>Utkarika</i> (A type of poultice) | + | + | | | | |
| | <i>Udvartana</i> (Rubbing) | | + | | | | |

| | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---|---|---|---|---|---|
| Kshudra Karma | <i>Karna Purna</i> (Oleation of Ears) | | + | | | | |
| | <i>Gandusha</i> (Holding it in the mouth) | | + | | | | |
| | <i>Kavala Dharana</i> (Mouth gargling) | | + | | | | |
| Panchakarma | <i>Virechana</i> (Purgatives) | + | + | | | | |
| | <i>Asthapana Vasti</i> (Decoction enema) | | + | + | + | + | |
| Kerala Panchakarma | <i>Shiro Dhara</i> (Pouring liquid medicaments over the forehead) | | | | | | + |
| | <i>Kaya Sheka</i> or <i>Pizhichil</i> (Squeezing medicated liquid all over the body) | | | | | | + |
| CS- Charaka Samhita, SS- Sushruta Samhita, AH- Ashtanga Hrudaya Samhita, AS- Ashtanga Samgrha, BP- Bhava Prakasha, PT- Panchakarma Therapy | | | | | | | |

Internal applications of Dhanyamla:

Dhanyamla can be administered per oral (*Pana*, *Anupana*, *Virechana*, *Gandusha* and *Kavala*), Nasal (*Nasya*) or Rectal (*Vasti*).

Indications of Dhanyamla in Oral route

In Authentic Ayurveda texts it is indicated *Dhanyamla* per oral for various ailments in different forms as given in Table No 07.

Dosage: It can be administered orally 10-20 ml at a time twice a day.

Table No 07: Internal applications of Dhanyamla

| Preparation | Indications |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pana (Drink) | <i>Vataja Kasa</i> (a type of cough), ^[45] <i>Kaphaja Kasa</i> (a type of cough), ^[46] <i>Peenasa</i> (Rhinorrhoea), ^[47] <i>Prathishya</i> (Acute Coryza), ^[47] <i>Vataja Ashmari</i> (a type of Calculi), ^[48] <i>Athisthaulya</i> (Obesity), ^[49] <i>Vata Gulma</i> (a type of Abdominal tumour), ^[50] <i>Vataja Shula</i> (a type of Colic), ^[51] <i>Parshva Shula</i> (Pain in Flanks), ^[52] <i>Shataponaka Bhagandara</i> (Multiple Fistula) ^[53] |
| Yusha (Soup) | <i>Sarva Kasa</i> (all types of cough), ^[54] <i>Ateesara</i> (Diarrhoea), ^[55] |
| Anupana (Co drink) | With <i>Shunti Churna</i> , <i>Alambushadi Churna</i> , <i>Vaishvanara Churna</i> , <i>Bhagottara Alambushadi Churna</i> & <i>Pathyadi churna</i> for <i>Amavata</i> (Rheumatism), ^[56] <i>Shataponaka Bhagandara</i> (Multiple Fistula), ^[53] <i>Apakwa Antar vidradi</i> (Internal abscess), ^[57] <i>Pakwa Antar Vidradi</i> (Internal abscess), ^[58] <i>Vatarbuda</i> (a type of Malignant tumour), ^[59] <i>Grahani</i> (Sprue), ^[60] <i>Vataja Shula</i> (a type of Colic), ^[61] <i>Krumija Hrud Roga</i> (a type of Heart disease), ^[62] <i>Udavarta</i> (Oppression in chest), ^[63] <i>Visuchika</i> (Gastro enteritis) ^[64] |

| | |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ghruta (Medicated Ghee) | <i>Kanjika shatpala Ghruta</i> for <i>Amavata</i> (Rheumatism), ^[65] <i>Dushyodara</i> (a type of Abdominal distension), ^[66] <i>Vataja Shotha</i> (a type of Oedema), ^[67] <i>Ateesara</i> (Diarrhoea), ^[68] <i>Vata Gulma</i> (a type of Abdominal tumour), ^[69] <i>Ajeerna</i> (Indigestion), ^[69] <i>Adhmana</i> (Flatulence), ^[69] <i>Shula</i> (Colic), ^[69] <i>Apatantraka</i> (Convulsions), ^[70] <i>Vataja Vruddhi</i> (a type of Scrotal enlargement) ^[71] |
| Pinda (Moulded drugs with liquids) | <i>Rasona Pinda</i> for <i>Amavata</i> (Rheumatism), <i>Apasmara</i> (Epilepsy), <i>Agnimandya</i> (Low digestive power), <i>Kasa</i> (Cough), <i>Shwasa</i> (Dyspnoea), <i>Shula</i> (Colic) ^[72] |
| Gandusha (Holding it in the mouth) | <i>Sarvasara Mukha Roga</i> (Oral diseases) ^[73] |
| Kavala Dharana (Mouth gargling) | <i>Sarvasara Mukha Roga</i> (Oral diseases) ^[73] |
| Virechana (Purgatives) | <i>Grahani</i> (Sprue), <i>Pandu</i> (Anaemia), <i>Gulma</i> (Abdominal tumour), <i>Shotha</i> (Oedema) ^[74] |
| Asthapana Vasti (Decoction enema) | <i>Ama Roga</i> (Diseases due to undigested food), <i>Alasaka</i> (Intestinal obstruction), <i>Apachi</i> (Scrofula), <i>Gulma</i> (Abdominal tumour), <i>Krumi</i> (Worm infestations), <i>Kaphaja Pandu</i> (type of Anaemia), <i>Alasya</i> (Lassitude), <i>Madatyia</i> (Alcoholism) ^[75] , <i>Vata Vyadhi</i> (Neurological disorders) ^[76] |
| Karna Purna (Oleation of Ears) | <i>Vataja Karna Shula</i> (a type of Earache) ^[77] |

External applications of Dhanyamla:

Dhanyamla can also be applied externally for various illnesses and these are tabulated in Table No 08.

Table No 08: Indications of External Applications of Dhanyamla

| Method of administration | Indications |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Avagaha Sweda (Tub fomentation) | <i>Jvara</i> (Fever), ^[78] <i>Daha</i> (Burning sensation of the body), ^[78] <i>Shushka Arshas</i> (a type of Haemorrhoids) ^[79] |
| Nadi Sweda (Pipe fomentation) | <i>Rajyakshma</i> (Tuberculosis), ^[80] <i>Shataponaka Bhagandara</i> (Multiple Fistula), ^[81] <i>Vataja Galaganda</i> (a type of Goitre), ^[82] <i>Karna Shula</i> (Earache) ^[83] |
| Parisheka Sweda (Shower fomentation) | <i>Jvara</i> (Fever), ^[78] <i>Daha</i> (Burning sensation of the body), ^[78] <i>Vatadhika Vata Rakta</i> (a type of Gout), ^[84] <i>Kaphadhika Vata Rakta</i> (a type of Gout) ^[85] |
| Upanaha (Poultice) | <i>Vata Vyadhi</i> (Neurological disorders), ^[86] <i>Vatodara</i> (a type of Abdominal distension), ^[87] <i>Vata Vidradi</i> (a type of Abscess), ^[88] <i>Gulma</i> (Abdominal tumour) ^[89] |

| | |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alepa (Paste) | <i>Sidhma Kushta</i> (Chloasma), ^[90] <i>Urusthambha</i> (Stiffness of the thigh), ^[91] <i>Grudhrasi</i> (Sciatica), ^[91] <i>Thrushna</i> (Thirst), ^[92] <i>Adhmana</i> (Flatulence), ^[93] <i>Karnashula</i> (Earache), ^[94] <i>Kaphadhika Vata Rakta</i> (a type of Gout), ^[95] <i>Vataja Galaganda</i> (a type of Goitre), ^[96] <i>Ardhavabhedaka</i> (Migraine), ^[97] <i>Suryavarta</i> (Diurnal), ^[98] <i>Shankhaka</i> (Temporal headache), ^[98] <i>Amavata</i> (Rheumatism) ^[99] |
| Udvartana (Rubbing) | <i>Sidhma Kushta</i> (Chloasma) ^[90] |
| Utkarika (A type of poultice) | <i>Hikka</i> (Hiccough), ^[100] <i>Shwasa</i> (Asthma), ^[100] <i>Vrana</i> (Ulcer) ^[101] |
| Shiro Vasti (Holding medicated liquid over the head by using a cap) | <i>Vata Vyadhi</i> (Neurological disorders), <i>Pakshaghata</i> (Hemiplegia), <i>Anidra</i> (Insomnia), <i>Shirahshula</i> (Headache), <i>Ardhavabhedaka</i> (Migraine) ^[102] |
| Shiro Dhara (Pouring liquid medicaments over the forehead) | <i>Vata Vyadhi</i> (Neurological disorders), <i>Pakshaghata</i> (Hemiplegia), <i>Anidra</i> (Insomnia), <i>Shirahshula</i> (Headache), <i>Ardhavabhedaka</i> (Migraine) ^[102] |
| Kaya Sheka or Pizhichil (Squeezing medicated liquid all over the body) | <i>Pakshaghata</i> (Hemiplegia), <i>Amavata</i> (Rheumatism), <i>Grudhrasi</i> (Sciatica), <i>Sandhigata Vata</i> (Osteoarthritis) ^[102] |

Dhanyamla can be used for three consecutive days while performing *Shiro Dhara*. Forth day onwards have to use fresh *Dhanyamla*.

Properties of Physiochemical Analysis of Dhanyamla

Ollakkod S., Kethamakka SRP have analyzed the Physiochemical properties of *Dhanyamla* at K.L.E. society’s Pharmacy College, Gadag. The findings are given in Table No 09.

Table No 09: Properties of Physiochemical Analysis of Dhanyamla^[103]

| Test | Value | Interpretation | |
|-------------------------------|-----------------|----------------|------------------------|
| PH | 3.03 | Acidic | |
| Specific gravity | 1.01 | | |
| Test for Alkaloids | Mayer’s Test- | Positive | Alkaloids present |
| | Hager’s Test | Positive | Alkaloids present |
| Test for Carbohydrates | Molisch Test | Positive | Carbohydrate present |
| | Benedict’s Test | Positive | Reducing sugar present |
| | Barfoed’s Test | Positive | Monosaccharide present |

Phytochemicals of the ingredients of Dhanyamla : Phytochemicals are natural plant chemicals that have protective or disease preventive properties. Ingredients

of *Dhanyamla* comprise various phytochemicals which are given in Table No 10. **Table No 10: Phytochemicals of the ingredients of Dhanyamla**^[22- 34]

| | |
|------------|---------------------------|
| Ingredient | Phytochemicals containing |
|------------|---------------------------|

| | |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tandula (<i>Oryza sativa</i>) | Starch, Globulin, Albumin, Oryzagenin, Vitamin B, Trigonelline, Trigonelline |
| Kulattha (<i>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 |
| Kangubeeja (<i>Panicum sumatrense</i>) | Alkaloid, Protein, Fat, Minerals, Crude fibers |
| Kodrava (<i>Paspalum scrobiculatum</i>) | Phenol, Tannins, Alkaloids, Falvonoides, Saponins |
| Nagara (<i>Zingiber officinale</i>) | Zingerone, Shogaol, Camphene, Phellandrene, Zingiberene, Cineol, Borneol, Gingerol, Gingerin, Resins, Geraniol |
| Nimbuka (<i>Citrus aurantifolia</i>) | Citric acid, Malic acid, Phosphoric acid, Volatile oil, Hesperidin |
| Deepyaka (<i>Trachyspermum involucreatum</i>) | Volatile oil, Phellandrene, Thymol, p- cymol |

Bioactivities of the ingredients of *Dhanyamla*

Biological activities are exerted by the principle phytochemicals of the plant materials. Some of the bio activities of the

herbs of *Dhanyamla* have been proved recently by the researchers as expressed in Table No 11.

Table No 11: Bioactivities of the ingredients of *Dhanyamla* ^{[104]-[111]}

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

DISCUSSION

The preparation method of *Dhanyamla* could be varied according to the environmental changes. These all variations may enhance the fermentation procedure.

The predominant *Rasa* of *Dhanyamla* is *Amla* (sour). According to the classics,

Amla Rasa stimulates the *Agni* (digestive power). It is good for the heart (*Hrudya*), digestive (*Pachana*), appetiser (*Rochana*), easy for digestion (*Laghu*) and unctuous (*Snigdha*). *Laghu* and *Teekshna Guna* of *Dhanyamla* will enhance the action of

Agni (digestive power). *Dhanyamla* is hot in potency (*Ushna Veerya*). It mitigates vitiated *Vata Dosha* and *Kapha Dosha*. Therefore *Dhanyamla* is effectively used for *Vataja*, *Kaphaja* or *Vata Kapha Sam-sarjana Janya* diseases.

The usage of *Dhanyamla* is beneficial in the diseases of *Annavaha* and *Rasavaha Srotas* as it consists with *Deepana*, *Pachana*, *Preenana* and *Rochana* properties. These properties will enhance the activity of *Agni*, leads to *Ama pachana* and enhance appetite. Therefore drug is most suitable for *Ama Janya* conditions like *Amavata* (Rheumatism), *Urustambha* (Stiffness of the thighs) and *Ajeerna* (Indigestion).

Jvara (Fever) is the one of the associate feature of *Ama*. *Dhanyamla* is having *Jvaraghna* property. Hence it can be safely applied to the patients having *Jvara* (Fever).

Diseases of *Vata Vaha Srotas* as well as *Asthivaha Srotas* can be effectively managed with the properties of *Vatanulomana*, *Shula Prashamana*, *Nadi Uttejaka*, *Vedana Sthapana*, *Mashtishka Balakaraka* and *Sheeta Prashamana*.

Dhanyamla is also beneficial for emaciated or weakened patients due to its *Jeevana*, *Bala Prada*, *Veerya Prada*, *Shramahara*, *Klamahara* and *Shoshahara* properties.

As *Dhanyamla* is having attributes similar to *Pitta Dosha* it may not good for the conditions of vitiated *Pitta Dosha* or *Rakta Dhatu* such as *Amlapitta*, *Raktapitta* and *Kamala*. But it is prescribed in *Vataja* and *Kaphaja* types of *Vata Rakta* (Gout).

The action of *Dhanyamla* can also be justified by considering the phytochemicals of the ingredients. Ingredients of *Dhanyamla* are rich in phytochemicals such as flavonoides and tannins. It has been proven that

flavonoides are having good antioxidant property. Tannins promote the healing process by increasing capillary formation. Hesperidin; a glucoside has an ability to prevent capillary bleeding. It may also reduce inflammation. Most often it is used for blood vessel conditions such as haemorrhoids, varicose veins and poor circulation (venous stasis). Flavonoids are a widely distributed group of poly phenolic compounds with health-related properties, which are based in their antioxidant activity. These properties have been found to include anticancer, antiviral, anti inflammatory activities, effects on capillary fragility, and an ability to inhibit human platelet aggregation.

The analgesic and Anti-inflammatory actions of ingredients are beneficial in the management of inflammatory conditions. Hypoglycemic and Anti hyperlipideamic actions will help to eliminate metabolic disorders such as *Atisthaulya*. Anti oxidant and antitoxic actions may help to reduce degenerative disorders.

Researches on Dhanyamla: I. Ollakkod S. et al. have reported that the treatment with *Dhanyamla Kayasheka* (External use of *Dhanyamla*) effectively reduced the features of *Amavata* (Rheumatoid Arthritis) such as *Sandhigraha* (Joint stiffness), *Sandhiruk* (Joint pain), *Sparsha Asahishnuta* (Tenderness over the joint), *Gourava* (Heaviness) and *Sandhishotha* (Joint swelling). The medicine was improved level of diverse antioxidants. ^[112]

II. Ongoing research on *Dhanyamla* ^[113]

The authors are currently conducting a research using *Dhanyamla* under the title of "Comparative evaluation of *Dhanyamla Vasti* and *Kayasheka* in the management of *Amavata* with special reference to Rheumatoid Arthritis" at Ayurveda Teaching Hospital Borella, Sri Lanka. The re-

search consisted of two groups namely Group A and B.

The patients of both groups were administered 10 ml of *Dhanyamla* twice a day, after a meal internally, for three consecutive days. After the internal administration of *Dhanyamla*, on the fourth day Group A patients were subjected to *Vasti Karma* with *Dhanyamla* for 14 days. Patients of Group B were subjected to *Dhanyamla Kayasheka* for 14 consecutive days.

By oral administration of *Dhanyamla* (*Dhanyamla Pana*) clinical features like *Jvara* (Fever), *Angamarda* (Body aches) and *Aruchi* (Anorexia) were subsided. By *Dhanyamla Vasti* and *Dhanyamla Kayasheka*, *Bahusandhi Shula* (Joint pain), *Bahusandhi Shotha* (Joint stiffness), *Sparsha Asahishnuta* (Tenderness over the joint) and *Sandhi Stabdhatata* (Joint stiffness) were reduced significantly. *Kriya Hani* (loss of movements) of the joints was improved. Arthritis Impact Measurement Scale (AIMS) was also improved after the treatment with *Dhanyamla*.

CONCLUSION

Dhanyamla can be used in each and every aspect of therapeutic measures in Ayurveda such as *Kshudra Karma* (*Karnapurna*, *Kavala Dharana* and *Gandusha*), *Purvakarma* (*Sweda*), *Panchakarma* (*Virechana* and *Vasti*) as well as *Keraliya Panchakarma* (*Shiro Dhara* and *Kayasheka*). It is concluded that *Dhanyamla* is a medicine which can be used as multifaceted treatment.

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