



# **Bhavana Samskara Improves The Pharmacognostic Values Of Antidiabetic Ayurvedic Formulation, Nishamalaki Curna**

*Patil Usha*

Reader, Sri JayendraSaraswati Ayurveda College and Hospital, Nazaretpet, Chennai 600123

[Ushapatildg@gmail.com](mailto:Ushapatildg@gmail.com)

## **Abstract**

Prameha (Diabetes Mellitus) a metabolic disorder is one of the Asthamahagada. Various drugs and formulations have been explained in the text for the treatment of prameha depending upon the involvement of the dosh and dushyas. Nishamalaki is one of the effective formulations explained in astangahradaya for the management of Prameha.

The concept of samaskara has been explained in caraka samhiavimanashana for the transmigration of gunas better therapeutic effect of the drugs. In the present study effect of bhavana samskara on physico-chemical and phytochemical characters of nishamalaki formulations developed at pharmacy of Sri Jayendra Saraswathi Ayurveda College, Chennai. .

The nishamalki formulation was prepared by mixing the Nisha (*Curcuma longa*) and Amalaki (*Embllica officinalis*) powders in equal proportions. The mixture was triturated with juice of Amalaki for three days. Nishamalaki powder without any treatment with juice was considered as control. Organoleptic, microscopic, phytochemical and levels of Vit C and curcumin was estimated. Among the physico-chemical characters, the formulations following samaskara showed increased levels of total ash, water soluble ash and yield of alcoholic extract while other parameters showed no significant change.

Nishamalaki following samskara showed the presence of proteins, carbohydrates, phenol, tannin and flavanoids in the aqueous extract while alcoholic extract showed the presence of proteins, carbohydrates, tannin, flavanoids, glycosides, steroids, terpenoids and alkaloids. In control formulation phenols, tannins and flavanoids were present in aqueous extract while proteins, carbohydrates, phenols and tannins were present in alcoholic extract. A significant difference in Vit C and curcumin levels were observed following samskara of nishamalaki.

Observed improvement in the active constituents following bhavana samaskara confirms the scientific basis behind methods and procedures suggested in preparation of ayurvedic formulations.

Key words: Nishamalaki, samskara, *Curcuma longa*, *Embllica officinalis*, physico-chemical and phytochemical characters.

## **INTRODUCTION:**

India has the rich heritage of traditional medicine and ayurveda is one of the well developed ancient system of medicine in which many hidden truths are explained. Samskara is one of the processes in preparation of ayurvedic formulations. Samskara enhances the medicinal property of the formulation and attains maximum potency to cure the diseases<sup>1</sup>.

Reference are available on utility of Nishamalaki churna in the Astanga Hrdaya Prameha Chikitsa 12/5 i.e., 'Dhatrirasaplutaamprataharidraammaakshikanvitam', taking dhatriswarasa (juice of amalaki) with nisha (haridra) along with honey in the early morning in the empty stomach effective in Prameha (Diabetes Mellitus)<sup>2</sup>.

Diabetes mellitus (Madhumeha), is a group of metabolic disorder in which a person has a high blood sugar, because of body does not produce sufficient amount of insulin or lack of conversion of glucose into glycogen in the cells and tissues. This high blood sugar leads to classical symptoms of polyuria, polydipsia and polyphagia. In ayurveda several effective, simple, economical preparation are documented for control, treatment and management of diabetes<sup>3</sup>.

Amalaki (*Embllica officinalis*), belongs to family Euphorbiaceae is one of the ingredient in Nishamalaki churna, it has sweet, sour, salt, astringent, pungent, bitter and astringent except salt so it balances natural balance of the taste (Su.S)<sup>4</sup>. The drug used for the purpose of Rasayana (rejuvenating), Vrsya (B.P.N)<sup>5</sup>, cures Srama (tiredness), Vamana (vomiting) (R.N.)<sup>6</sup> Raktapitta (bleeding disorder), Prameha (Diabetes mellitus) (B.P.N)<sup>7</sup>, Chakshusya (eye disorder) (Su.S)<sup>8</sup>. Studies have shown that the drug consists of gallic acid, tannic acid, gum, starch, sugar, albumin, minerals like calcium, iron, phosphorus and rich in vitamin C, carotene, thiamine, riboflavin and niacin<sup>9</sup>.

The other and main ingredient of Nishamalaki is Haridra (*Curcuma longa*), belong to family Zingiberaceae. Two varieties of haridra are mentioned in Bhavaprakasha, amaragandhi haridra and vanaharidra<sup>10</sup>. It balances the three dosas, the hot potency pacifies vata and kaphadoshas and the mild laxative and bitter taste pacifies pitta (B.P)<sup>11</sup>. Haridra has been recommended for treating the skin disorder (B.P.N)<sup>12</sup>, prameha (A.S.Su)<sup>13</sup>. Further, haridra has also been reported to contain antibacterial and antifungal activities in addition to promoting wound healing. Haridra is also useful in correcting the metabolism and useful in urticaria, eosinophilia and allergic rhinitis. The active constituents of turmeric are the flavonoid, curcumin, volatile oils, zingiberene, other constituents include sugar, protein and resins<sup>14</sup>.

Formulation with equal quantity of Nisha (*Curcuma longa*) and Amalaki (*Embllica officinalis*) has been recommended for treatment and management of diabetes. In the present study the drug is processed with the freshly prepared Amalaki juice for a period of three days, dried and collected in the container. Effect of samskara on physicochemical and pharmacognostic activities was evaluated.

## **MATERIAL AND METHODS:**

**Plant material:** Nishamalaki is a polyherbal formulation consists of two herbs Haridra (*Curcuma longa*) and Amalaki (*Embllica officinalis*).

Physico-chemical study like total ash, acid insoluble ash, water soluble ash, water and alcoholic extractive values loss on drying at 105°C, (As per pharmacopeia of India), phytochemical analysis<sup>15</sup>, powder microscopy as per the Pharmacopeia of India<sup>16</sup>.

**Table – 1** Ingredients of Nishamalaki

Botanical name	Sanskrit name	Part used	Quantity
<i>Curcuma longa</i>	Haridra	Rhizome	100 gms
<i>Embllica officinalis</i>	Aamalaki	Fruit	100 gms

## **Preparation of formulation**

The drug used in the preparation procured from the Poonamallee, Chennai market, cleaned and dried in shade and powdered separately. Each powder weighed and mixed uniformly and weighed and sieved by using 22No mesh. Bhavana samskara was done by triturating the powder with triturated with the freshly prepared juice of amalaki swarasa (juice of *Embllica officinalis*).

### Physico-chemical evaluation

Organoleptic qualities like, colour, odour, taste and texture was evaluated using standard methods. pH of 5% aqueous solution using digital pH meter CL 110. Physico-chemical parameters like, moisture, ash vales and extractive values were carried out as per the Pharmacopeia of India.

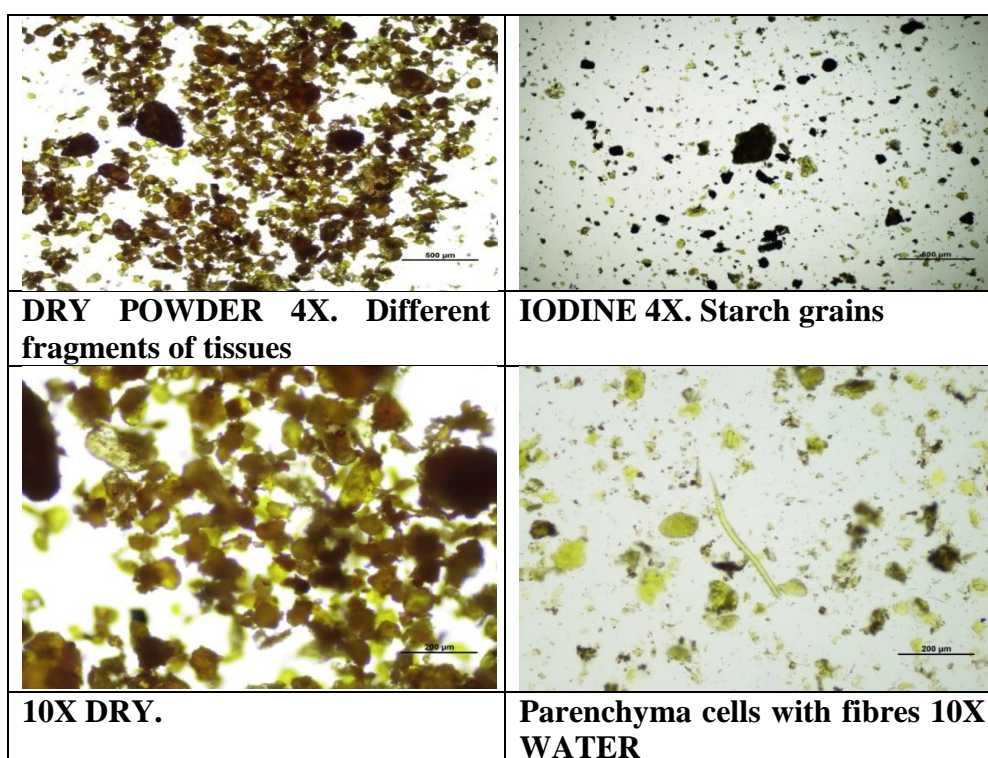
### Preliminary Phytochemical Analysis

Preliminary phytochemical analysis was carried out using standard protocols (15) and the vitamin C following spectrophotometric method<sup>17</sup>. Additionally, sensory characteristics like colour, odour, touch and taste was also recorded.

### RESULTS:

Effect of bhavanasamskara was organoleptic (Table 2.), physic-chemical properties Table 3.), phytochemical characteristics (Table 4.) and concentration of vitamin C (Table 5) are presented. The test for percentage of moisture content determines both water and volatile matter, acid insoluble ash measures the amount of silica present especially sand. Extractive values were examined which are useful for evaluation of nature of chemical constituents present in the drug. Phytochemical analysis screening of compound formulation was identified through qualitative chemical analysis indicates the presence of alkaloids, tannins, carbohydrates, flavonoids, steroids, alkaloids etc. Samskara seems to have no significant difference in the microscopic picture (Fig.1 and Fig.2).

**Fig. 1. Powder microscopy of Nishamalaki churna before bhavana samskara**



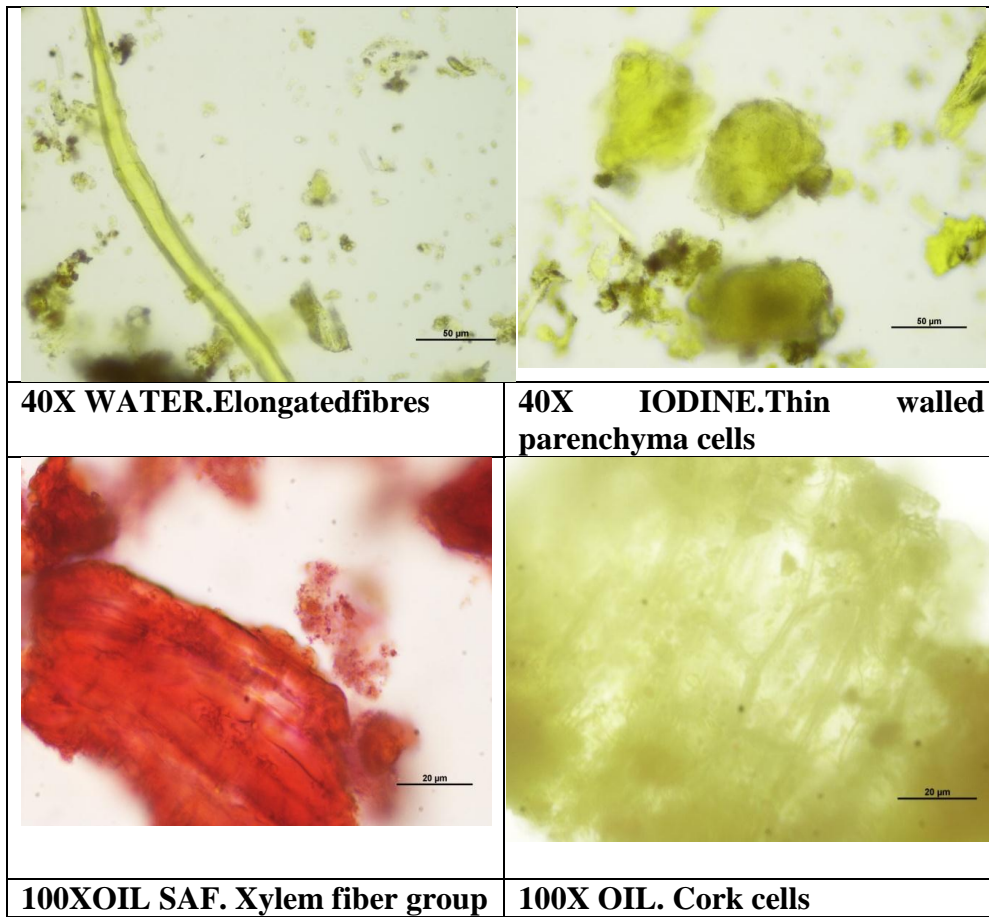
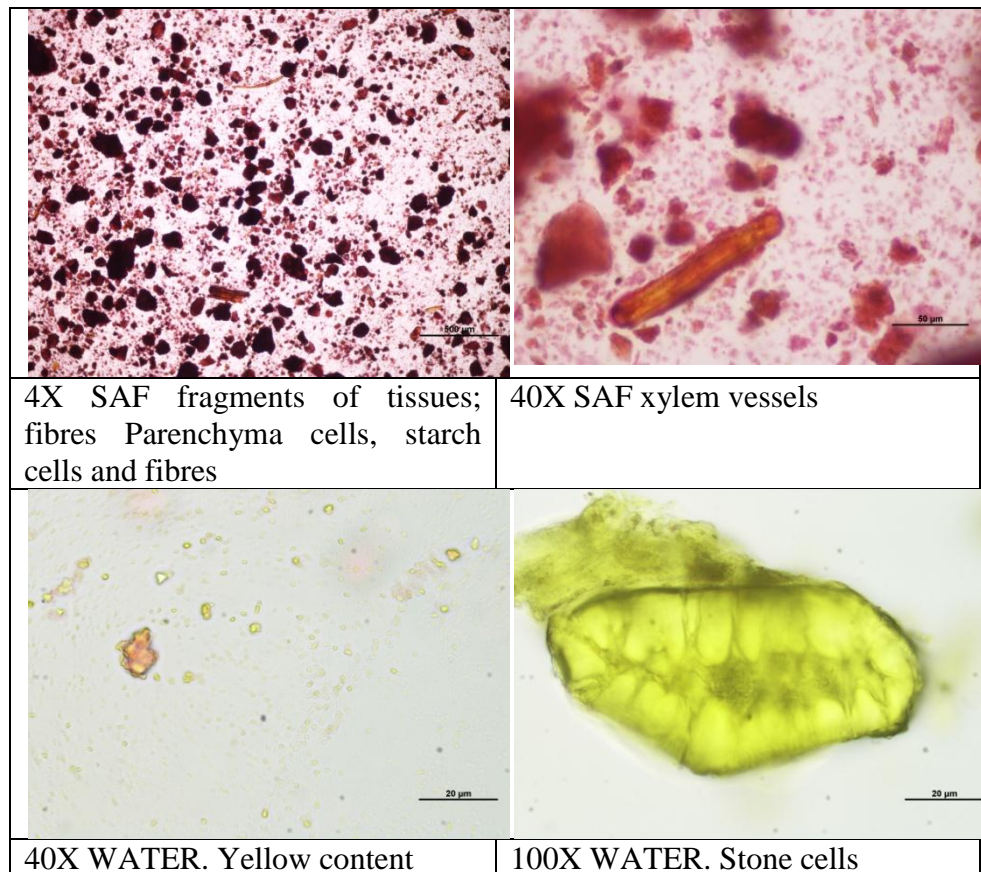


Fig.2. Powder microscopy of Nishamalaki churna after bhavana samskara



Bhavana of drug has shown to enhance the Vitamin C concentration from 34 mg/g before the treatment to 38 mg/g after. An estimated increase of 11.76% which is significant as the Vit C is the important active component in nishamalakki.

**Table – 2** Effect of bhavana on organoleptic characters of nishamalakkiurna

Sl.No.	Character	Control	Treatment
1.	Color	Yellow	Greenish black
2.	Odour	Turmeric	Specific
3.	Touch	Soft	Rough
4.	Taste	Bitter	Astringent/sour

**Table – 3**Effect of bhavana on physico-chemical constituents of nishamalakkiurna

Sl.No	Test	Control	Treatment
1.	Loss on drying (%)	7.60	7.00
2.	Total ash (%)	6.02	11.00
3.	Acid insoluble ash (%)	0.55	0.13
4.	Water soluble ash (%)	3.39	6.22
5.	Water soluble extractive (%)	10.40	10.00
6.	Acid soluble extractives (%)	8.70	9.60
7.	pH meter	3.24	3.34

**Table – 4** Effect of bhavana on phytochemical characteristics of nishamalakkiurna

Sl. No.	Test	Aqueous extract		Alcoholic extract	
		Control	Treatment	Control	Treatment
1.	Proteins	-	-	+	+
2.	Carbohydrates	-	+	+	+
3.	Phenols and Tannins	+	+	-	+
4.	Saponins	+	+	-	+
5.	Flavanoids	+	+	-	+
6.	Glycosides	-	-	-	+
7.	Steroids	-	-	-	+
8.	Terpenoids		-	-	+
9.	Alkaloids	-	-	-	+

**Table –5** Effect of bhavana on Vitamin C

Sl. No.	Test	Control	Treatment
1.	Spectrophotometry	34mg/g	38mg/g

## **DISCUSSION:**

Samskara is the one of the important method to improve the potency of drugs in ayurveda. Bhavana samskara is an important process to make the drug more potent and can be administered for various therapeutic usages. However, effects of the bhavana samskara on physico-chemical properties of the drugs

are rarely reported. In the present study bhavana samskara on nishamalakki curna has shown significant improvement in the quality of the drug. Organolaptic evaluation showed changes in colour, odor, touch and taste suggesting significant effect of bhavana on basic chemical nature of the drug. Microscopic study showed no significant change in the structure of cells.

Among the physico-chemical constituents significant improvement in levels of total ash, water soluble ash and acid soluble extractives and in alcoholic extract all the components like proteins, carbohydrates, phenols, tannins, saponins, flavanoids, glycosides, steroids, terpenoids and alkaloids were strongly positive in the vitamin C estimation there is an increases of 4mg/g after the treatment with the juice of amalaki swarasa, while acid insoluble ash was reduced following bhavana samskara.

## **Conclusions**

Significant improvement in the active constituents of the drug following the bhavana shows the importance of bhavana samskara. Results of the study suggest that bhavana samskara helps in expressing the hidden constituents of the drug ultimately improving its potency. In the present study bhavana samskara was done for three days only and effect of longer duration bhavana may be studied in future. Further, studies on effect of bhavana on pharmaco-therapeutic values of nishamalki are needed to understand the clinical significance of the samskara in ayurvedic medicine.

## **Acknowledgement**

## **Reference**

- 1.Sastri K. (2006),edited by Dr. Gangasahaya Pandeya, Caraka Samhita, Vimanasthana 1/22,Chaukambha Sanskrit Sansthan, Varanasi
- 2.Kaviraja Atrideva Gupta, edited by Vaidya Yadunadana Upadhyaya, Astanga Hradaya, Prameha Chikitsasthana 12/5, Chaukambha Sanskrit Sansthan, Varanasi; 372.
3. Edward C.R.W, Bouchier I.A.P, Haslett C., Davidson Principles of Medicine; 1990. 724.
4. Sastri, K.A, Susruta Samhita Sutrasthana. 46/144, Chaukambha Sanskrit Sansthan, Varanasi; 2012. 256.
5. Chunekar K.C, edited by G.S. Pandey, Bhavaprakasha Nighantu, Chaukambha Bharati Academy, Varanasi; 1995
6. Narahari, edited by Indradeo Tripathi, Raja Nighantu, Karaveeradi Varga Krishnadas Academy, Varanasi; 1998. 371.
- 7.Chunekar K.C, edited by G.S.Pandey, Bhavaprakasha Nighantu, Chaukambha Bharati Academy, Varanasi; 1995. 132.
8. Sastri K.V,Susruta Samhita Sutrasthana 46/144,Chaukambha Sanskrit Sansthan, Varanasi; 2012. 256.
9. Satry J.L. Illustrated Dravya Guna Vigyan Vol 2,ChaukambhaOrientalia, Varanasi; 2014.220.
10. Chunekar K.C, edited by Dr.G.S.Pandey, Bhavaprakasha Nighantu, Chaukambha Bharati Academy, Varanasi; 1995. 132.
- 11.Chunekar K.C, edited by G.S.Pandey, Bhavaprakasha Nighantu, Chaukambha Bharati Academy, Varanasi; 1995.132.
12. Chunekar K.C, edited by G.S.Pandey, Bhavaprakasha Nighantu, Chaukambha Bharati Academy, Varanasi; 1995.132.

13. Sastri K.A, Susruta Samhita Sutrasthana 46/144, Chaukambha Sanskrit Sansthan, Varanasi; 2012. 256.
14. Satry J.L, Illustrated Dravya Guna Vigyan, Vol 2, Chaukambha Orientalia, Varanasi; 2014. 513.
15. Trease E.G, Evans W.C, Pharmacognosy. 11<sup>th</sup> ed. Bailliere Tindall, London; 1978. 115.
16. Ayurvedic Pharmacopeia of India, Ministry of Health and Family Welfare. New Delhi; 1996.
17. Kapur A, Haskovic A, Copra-Janicijevic A, Klepo L, Topcagic Tahirovic I, Sofic E,. (2012). Spectrophotometric analysis of total ascorbic acid content in various fruits and vegetables. Bulletin of the Chemists and Technologists of Bosnia and Herzegovina, 2012; 40; 40-44.