

## ***INFLUENCE OF BHAVANASAMSKARA ON PHYSICO-CHEMICAL CONSTRAINTS OF DOOSHIVISHARI AGADA***

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### **ABSTRACT**

**Background:** People are prone to various kinds of poisons, including slow poisons in food as well as in environment. It is not mandatory that only direct intake of a poisonous materials lead to *Dooshivisha lakshana*. Standardization of herbal formulation is essential to assess the quality of drugs. This article reports on standardization of *Dooshivishari Agada*, an Ayurvedic formulation indicated in various poisonous and non-poisonous conditions by Ayurvedic as well as traditional *Keralian Visha Vaidyas*. **Aims:** Physicochemical standardization of *Dooshivishari Agada*. **Methodology:** *Dooshivishari Agada* was prepared by two methods as per classics in *Gulika* (Tablet) form. In-house preparation was done with *bhavana* with *Kashaya* and water and has been standardized on the basis of organoleptic characters, physical characteristics, Physico-chemical properties and thin layer chromatography (TLC) methods. **Results:** pH of *Dooshivishari Agada* prepared with water at 5% aqueous solution was 4.58% w/v, Loss on drying at 1100C 10.57% w/w, Total Ash 8% w/w, Acid Insoluble Ash 2.45% w/w, Water Soluble Ash 23.85% w/w, Alcohol Soluble Extractive 15.87% w/w, Methanol Soluble Extractive 23.66% w/w. Fluorescence analysis results indicated no fluorescent material in formulation. Microbial limit test (MLT) showed there was no growth of organisms after 24hrs of incubation as per IP. Thin Layer chromatographic analysis (TLC) showed 10 and 11 picks at 254nm and 366nm respectively. **Conclusion:** Current study was aimed at analysing influence of *bhavanadravya* on analytical parameters. The set parameters can be used as reference standards for the quality control.

**Keywords:** *Dooshivishari agada*, Physico-chemical, *Bhavana samskar*

### **INTRODUCTION**

Sub-clinical toxic manifestation due to residual toxins/ poisons the body is called *dooshivisha*. *Dooshivishari Agada* is compound formulation

explained in context of *VishaChikitsa* in the *Samhitas*, which is indicated in the treatment of all types of *Visha* (poisoning)<sup>1,2,3,4</sup>. *Agada*'s have been

told to prepare in a specific manner, but when it comes to *Dooshivishari Agada* there is no such *bhavanadravya* mentioned. As per *Anukthaparibhasa Shranghadara* says to use either *jala* or *ka-shaya* of the same *dravyas* used for *choorna*. *Bhavana* (maceration) is one among the *samanyasamskaras* told by acharyas<sup>5</sup>. *Samskara* is an important concept lay down by ancient Ayurveda scholars and is defined as transformation (*Samskaro hi Gunantaradhanamuchyate*) of the inherent attributes of a substance which leads to the fortification<sup>6</sup>. Analytical techniques have become a platform for Ayurveda principles to be evidenced. The subtle transformations that occur during the *samskara* can be identified by these procedures and

techniques such as preliminary phytochemical studies, TLC and so on. Analytical variations in turn show the difference in the chemical changes taking place due to *bhavana*. Here an attempt has been made to trace the effect of different changes that could occur when prepared by giving *bhavana* with different media on analytical ground.

## Materials and Methods

### Materials used:

**Ingredients of *dooshivishari agada*<sup>7, 8,9,10</sup> have been mentioned in table no 1.**

Sample 1-*jalabhavana*

Sample 2-*kwathabhavana*

**Table 1:** Details of herbal drugs used in the preparation of *Dooshivishari Agada*

Sl.no	Dravya	Botanical Name	Official part
1.	<i>Pippali</i>	<i>Piper longum</i> Linn.	<i>Phala</i> (Fruit)
2.	<i>Pippalimoola</i>	<i>Piper longum</i> Linn.	<i>Phala</i> (Fruit)
3.	<i>Dhyamaka</i>	<i>Cymbopogon martini</i> (Roxb.) Wats.	<i>Patra</i> (Leaves)
4.	<i>Jatamamsi</i>	<i>Nardostachysjatamamsi</i> .(N. grandiflora)	<i>Mula</i> (Root)
5.	<i>Lodra</i>	<i>Symplocosracemosa</i> Roxb.	<i>Twak</i> (Stem Bark)
6.	<i>Ela</i>	<i>Elettariacardamomum</i> Maton	<i>Phala</i> (Fruit)
7.	<i>Suvarchika</i>	<i>Tribulusterrestris</i> Linn.	<i>Phala</i> (Fruit), <i>Mula</i> (Root)
8.	<i>Katunnatum</i>	<i>Oroxylumindicum</i> (Linn.) Benth. Ex Kurz.	<i>Mulatwak</i> (Root bark)
9.	<i>Natam</i>	<i>Valerianawallichii</i> D.C.	<i>Mula</i> (Root)
10.	<i>Kusta</i>	<i>Saussurealappa</i> C.B. Clarke.	<i>Mula</i> (Root)
11.	<i>Yastimadhu</i>	<i>Glycyrrhizaglabra</i> Linn.	<i>Mula</i> (Root)
12.	<i>RaktaChandana</i>	<i>Pterocarpoussantalansis</i> Linn.	<i>Khandasara</i> (Heartwood)
13.	<i>Gairika</i>	<i>Red ochre s</i>	

### Details of preparation:

*Dooshivishari Agada* is a herbo-mineral compound prepared with thirteen ingredients given in Table 1. Sample 1 was given *bhavana* with *kwatha* prepared from the ingredients of the *Agada* and sample 2 with *jala*. For the preparation of *dooshivishariagada* by different media, reference have been taken from *rasa tarangini*.<sup>11</sup> Prepared *agadas* were evaluated for physico-chemical properties by using standard methods like loss on drying, ash value, pH, water-soluble ex-

tractive, methanol-soluble extractive, acid-soluble ash, TLC etc.

## RESULTS

### Organoleptic parameters

The specific characters that are mentioned in our classics for evaluating the qualities of preparation by colour, touch, fineness, taste, odour, etc. were noted through *Jyanendriya* in all the samples. These characters are useful to both, the patient and the physician, for having a primary idea about the

quality of different formulations without using chemical tests.

Qualitative evaluation based on sensory profile by observation of colour, odour, taste and Consistency was done. The results are tabulated below in Table no 2

### Organoleptic Characters of Dooshivishari Agada (DVA)

**Table 2:** Organoleptic characteristics

Parameters	Sample 1	Sample 2
Colour	Light Brown	Brown
Odour	Characteristic	Characteristic
Taste	Tikta	Tikta
Consistency	Hard	Hard

**Quantitative Parameters of DVA:** The standard protocols available for various procedures were

adopted. The results obtained are tabulated below in Table no 3

**Table 3:** Results of Quantitative Parameters

Sl.no.	Parameters	Sample 1	Sample 2
1	Tab. Disintegration Time (min)	35mins	45mins
2	Hardness (Kg/cm <sup>2</sup> )	9kg/cm <sup>2</sup>	11kg/cm <sup>2</sup>

**Physicochemical Properties of DVA:** The standard protocols available for various procedures

were adopted. The results obtained are tabulated below in Table no 4

**Table 4:** Illustrates the results of physicochemical analysis of DVA

Sl.no.	Parameters	Sample 1	Sample 2
1	pH at 5% aqueous solution	5.06	5.0
2	Loss on drying at 110 <sup>0</sup> C (% w/w)	9.9 % w/w	9.01% w/w
3	Total ash (% w/w)	12.14 % w/w	11.37% w/w
4	Water soluble extract (% w/w)	18.4% w/w	14.11 % w/w
5	Alcohol soluble extract (% w/w)	11.2% w/w	11.92% w/w
6	Acid insoluble ash (% w/w)	0.975% w/w	0.820% w/w

### Test for inorganic components:

Prepared ash of the drug material was added with 50% of v/v HCl. The filtrate was then subjected to

analyse the inorganic elements. The results are tabulated in Table no 5.

**Table 5:** Illustrates the inorganic components present in DVA

Sl.no.	Parameters	Sample 1	Sample 2
1	Phosphate	Absent	Absent
2	Carbonate	Absent	Absent
3	Calcium	Absent	Absent
4	Magnesium	Absent	Absent

5	Potassium	Absent	Absent
6	Iron	Present	Present
7	Sulphate	Present	Present
8	Chloride	Absent	Absent
9	Nitrate	Present	Present
10	Sodium	Present	Present

**Preliminary phytochemical screening:**

Aqueous and Alcoholic extracts of DVA were prepared with cold maceration technique. They were

further subjected for qualitative phytochemical screening. The results are mentioned below in Table no 6.

**Table 6:** Phytochemicals in *Dooshivishari Agada* aq. And alc. Extract:

Sl.no.	Parameters	Test	Sample 1		Sample 2	
			Aqueous	Alcoholic	Aqueous	Alcoholic
1.	Carbohydrates	Molish	Absent	Present	Present	Present
2.	Reducing sugar	Benedicts	Present	Present	Present	Present
3.	Monosaccharides	Barfords	Present	Absent	Present	Present
4.	Pentose	Bails	Absent	Absent	Absent	Absent
5.	Hexose	Selwinoffs	Absent	Absent	Absent	Absent
6.	Non-reducing sugar	Benedicts	Absent	Absent	Absent	Absent
7.	Polysaccharide	Iodine test	Absent	Absent	Absent	Absent
8.	Protiens	Millons test	Absent	Absent	Absent	Absent
9.	Amino acids	Ninhydrin	Absent	Absent	Absent	Absent
10.	Steroids		Present	Absent	Present	Present
11.	Glycosides	Cardiac	Absent	Absent	Absent	Absent
12.	Saponins		Present	Absent	Present	Absent
13.	Flavonoids		Absent	Present	Present	Present
14.	Alkaloids	Dragandroffs	Absent	Present	Present	Present
15.	Tannins&phenolic		Present	Present	Present	Present

**TLC:**

After several attempts the best solvent system for running the TLC of DVA Toluene: ethyl acetate

(7:3) was considered as it gave a better separation of bands. With stationary phase as silica gel plate (60F254 of E merck) uniform thickness (0.2 mm).

**Table 7:** Illustrates Rf values of phytochemicals separated during TLC from alcoholic ext. of DVA. With solvent system Toulene: Ethyl Acetate (7:3)

Spots at NW		Spots at UV 254nm		Spots at UV 366nm	
Sample1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
0.08		0.07	0.06	0.07	0.08
0.19		0.12	0.10	0.11	0.12
0.75		0.16	0.62	0.16	0.25
		0.21	0.68	0.20	0.35
		0.25	0.75	0.24	0.4

	0.29	0.77	0.30	0.56
	0.35	0.93	0.38	0.71
	0.38		0.43	0.91
	0.43		0.47	
	0.48		0.73	
	0.53			
	0.58			
	0.64			

### Microbial limit test:

**Table 8:** Illustrates results of microbial results

Sl.no.	Microbial limit test	Sample 1	Sample 2
1	S.aureus	Absent	Absent
2	P.aeruginose	Absent	Absent
3	E.coli	Absent	Absent
4	Salmonella abony	Absent	Absent

## DISCUSSION

Both *Jalabhavita* and *kashaya bhavita dooshivishari agada* were brown in colour, bitter in taste, hard in consistency and had characteristic odour. Preliminary phyto chemical analysis showed presence of carbohydrates, reducing sugars, mono saccharides, saponins, alkaloids, flavonoids and tannins in both the samples. Inorganic elements like Iron, sulphate, nitrate and sodium were present in both the samples. Results for physico chemical analysis for both the samples were found within normal limits. The *bhavana dravyas* even after being different in the nature did not bring about any change in the qualitative chemical parameters. This might be because of the reason that these tests done analyse their presence and not the quantity. The *Kashaya dravya* might be improving the constituents quantitatively which trends with *bhavana samskar* as *gunatharadana* and needs to be done in further studies with higher sophisticated equipments. *Kashaya* is said to increase the potency which needs to be measured quantitatively. Flavonoids and Alkaloids were absent in Aqueous extract of sample 1 this may be because of the quantum of these elements were less hence non-

reactive to this test procedure. Presence of iron is obvious due to presence of *gairika*, but the qualitative percentage might be strong parameter to standardise the formulation.

## CONCLUSION

Current study was aimed at analysing influence of *bhavanadravya* on analytical parameters. All the parameters evaluated in both the samples were same. Thus *bhavanadravya* has minimal role in altering the qualitative parameters i.e. physico and phyto chemicals of the preparation, further study should be conducted for evaluating the variations in quantitative analysis of phyto chemicals present in it.

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