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Dooshivishari Agada: A Herbo-Mineral compound and its Standardization

Shilpa Hukkeri*, Mahesh P. Savalagimath**

Abstract

New upsurge of interest in Ayurveda and its rapidly increasing public use has given rise to many newer issues and challenges. One being lack of standardization and there is a need to develop it. Central council of Research in Ayurveda and Siddha (CCRAS) has given preliminary guidelines for standardizing formulations.

This present paper reports on standardization of Dooshivishari Agada (DVA), an Ayurveda Herbo-mineral compound. Ingredients of DVA were procured, authenticated and prepared in classical way by giving bhavana with the qwath prepared by same ingredients of Agada and consequently analysed for Organoleptic, physical characteristics, physiochemical, phytochemical screening, TLC and HPTLC was done for standardization. The phytochemical constituents found to be present in the finished product will possibly facilitate for understanding mechanisms of pharmacological action.

Keywords: Dooshivisha; Agada; Agada tantra; Visha.

Introduction

Dooshivishari Agada is a compound herbo-mineral preparation which is explained in context of Dooshivisha (Table 1).[1] A condition where in a visha (toxins/poisons) due to improper elimination form body or when low-potent toxins by virtue of which are battered by climatic conditions settles in body. This settled visha produces aliments like avipaka(indigestion), mandala (Erythamatous eruptions frequently) and vikarana bahuprakaran (various ailments) when triggering factors are congregate.[2]

Herbal formulations have been in use by the majority of Indians since ancient times and also increased inclination towards herbal formulations in present scenario is also seen. With an increase demand for safer drugs, attention has been drawn to the quality, safety, efficacy, and standards of the Ayurvedic formulations. The development of traditional system of medicine with perspectives of safety, efficacy and quality will help not only to preserve this system heritage but also to rationalize the use of natural products in healthcare. The need of quality control for Ayurvedic drugs is due to the fact that the preparation of drug according to the ancient method has been reduced due to the commercialization of Ayurvedic pharmacy in present era.[3]

Hence the present study was carried out to develop standardization for Dooshivishari Agada.

Materials and Method

Materials

Raw drugs of Dooshivishari Agada required for preparation were procured form market dealer and authenticated at AYUSH approved Drug Testing Laboratory, Solvents and

Author's Affiliation: *PG Scholar, **Reader, Dept of Agada Tantra, KLE's Shri BMK Ayurveda Mahavidyalaya, Belgaum, Karnataka, India.

Reprint's Request: Dr. Shilpa Hukkeri, PG Scholar, Dept of Agada Tantra, KLE's Shri BMK Ayurveda Mahavidyalaya, Belgaum, Karnataka, India.

E-mail: drshilpagouri@gmail.com

Table 1: Ingredients of Dooshivishari Agada[4]

SI	Dravya	Botanical Name	Official part
1.	Pippali	Piper longum Linn.	Phala (Fruit)
2.	Pippalimula	Piper longum Linn.	Mula (root)
3.	Dhyamaka	Cymbopogon martinii (Roxb.) Wats.	Patra (Leaves)
4.	Jatamamsi	Nardostachys jatamamsiDC.(N. grandiflora)	Mula (Root)
5.	Lodra	Symplocos racemosa Roxb.	Twak (Stem Bark)
6.	Ela	Elettaria cardamomum Maton	Phala (Fruit)
7.	Suvarchika	Tribulus terrestris Linn.	Phala (Fruit), Mula (Root)
	Katunnatum	Oroxylum indicum (Linn) Benth.Ex Kurz.	Mula twak (Root bark)
8.	Natam	Valeriana wallichii D.C.	Mula (Root)
9.	Kusta	Saussurea lappa C.B. Clarke.	Mula (Root)
10.	Yastimadhu	Glycyrrhiza glabra Linn.	Mula (Root)
11.	Rakhta chandana	Pterocarpus santalinus Linn. f.	Khandasara (Heartwood)
12.	Gairika	Red ochre	

chemicals of analytical grade were procured from E. Merck and S.D. fine chemicals, Mumbai for analysis of Dooshivishari Agada

Methodology

Preparation of Dooshivishari Agada (DVA).

1. Authenticated drugs were pulverised to powder and then sieved through 120 seive.
2. Gairika was subjected to shodhana according to Rasa Ratna[5] Sammuchaya by ghritha bharjana (ghritha was homemade)
3. All the individual choornas (100 gm each) were mixed with gairika (100 gm) and bhavana was given. Bhavana dravya was not mentioned hence the Qwath of the same drugs. *(i.e. the bharad of same ingredients of Dooshivishari Agada was taken forkashaya).*
4. Qwath was prepared as classical way with ratio of 1 part drug and 8 parts water reduced to ¼ the quantity and used in QS.[6]
5. 8 hours Bhavana was done daily for 7 days in Bhaishajya kalpana laboratory.
6. Daily observation in the required bhavana dravya, odour, colour, taste and consistency of Agada along with factors like Humidity and temperature were noted down.
7. On 8th day the vati were prepared by hand rolling and shade dried in Stainless steel Plates (which were used to dry Agada were given dhoopana with guggulu.)
8. Dried Dooshivishari Agada was then kept in clean and dry sterilized glass bottles.

Analysis of Dooshivishari Agada

Analysis of Dooshivishari Agada was carried out at AYUSH Approved Central research centre, Gairika was sent to Test house centre at Bangalore for quantity estimation of Fe %. Dooshivishari Agada was subjected to following analysis: Organoleptic characters (colour, odour, taste and consistency), Quantitative parameters (Weight variation, Tablet disintegration time, hardness and friability.) Microbial limit test ; Physicochemical properties (pH at 5% aq solution, loss on drying, total ash, acid insoluble ash, water soluble ash, water soluble extractive and alcoholic extractive valve), Qualitative parameters (inorganic elements organic),

Table 2: Organoleptic Characters of Dooshivishari Agada

Sl. No.	Parameters	Dooshivishari Agada
1	Color	Light Brown
2	Odor	Characteristic
3	Taste	Bitter
4	Consistency	Hard

Table No 3: Quantitative Parameters of Dooshivishari Agada

Sl.	Parameters		Dooshivishari Agada
1	Wt. Variation Test (mg)	Min Wt.	**230 mg**
		Max Wt.	270 mg
		Average Wt. (20 Tab)	250 mg
2	Tab. Disintegration Time (min)		45 min
3	Hardness (Kg/cm²)		7.4
4	Friability (%)		0.13%

Table 4: Physicochemical Properties of Dooshivishari Agada

Sl. No.	Parameters	Dooshivishari Agada
1	pH at Aqueous solution	4.6
2	Loss on Drying at 110°C (% w/w)	12.57 % w/w
3		/w
4		w
5		w
6		w/w
7		/w

Table 5: Qualitative Parameters of Dooshivishari Agada

Sl. No.	Parameters	Dooshivishari Agada
1	Carbonate	Absent
2	Calcium	Absent
3	Magnesium	Absent
4	Potassium	Absent
5	Iron	Present
6	Sulphate	Present
7	Chloride	Absent
8	Nitrate	Present
9	Sodium	Present

Fluorescence analysis of Dooshivishari Agada powder, Thin Layer Chromatography[7] - RF values of Dooshivishari Agada. HPTLC (Natural Remedies – Bangalore)

Photos: Preparation of Dooshivihsari Agada- Photo Plate 1.

Observations and Results

Gairika was sent to Test house centre at Bangalore for quantity estimation of Fe % it showed presence of **18 % Fe**. The average weight of DVA was 250 mg, hardness of vati was 7.4 kg/cm², disintegration time was 45 min and friability was 0.13 % .

HPTLC of DVA: HPTLC of Alcoholic extract DVA at 254nm wave length.

T1- Alcohalic ext (DVA II) T2- Aqueous ext (DVAI) ; Mobile phase – Toluene : Ethyl acetate (90 :30) in ml; Spraying reagent- Anisaldehyde sulphuric acid

Discussion

Dooshivishari Agada was having a characteristic odour of *Tagara* and *Dhyamaka*

Table 6: Shows Preliminary phytochemical screening

Sl. No	Parameters		Dooshivishari Agada	
			Aqueous	Alcoholic
1.	Carbohydrates	Molish	Present	Present
2.	Reducing Sugar	Benedicts	Brick red	Brown
3.	Monosaccharides	Barfords	Present	Present
4.	Pentose	Bails	-	-
5.	Hexose	Selwinoffs	-	Present
6.	Non-reducing sugar	Benedicts	-	-
7.	Polysaccharide	Iodine test	-	-
8.	Proteins	Millons test	-	Present
9.	Amino Acids	Ninhydrin test	-	-
10.	Steroids		Present	Present
11.	Glycoside	Cardiac Gly. Coumarin	Absent	Present
12.	Saponins		Present	-
13.	Alkaloids	Dragandroff's	Present	Present
14.	Tannins & phenolic		Present	Present

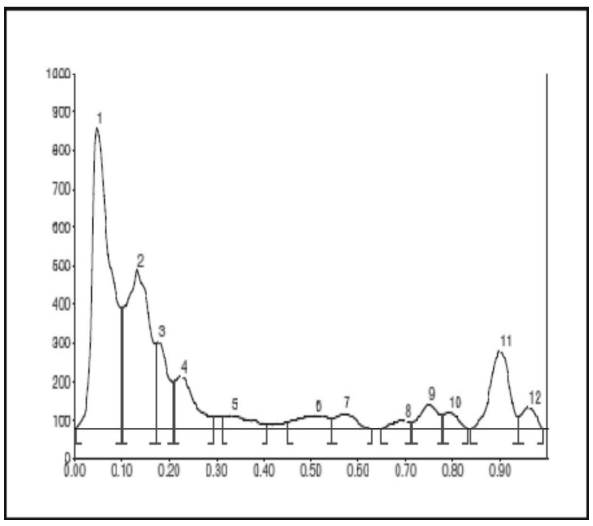
Table 7: Fluorescence Analysis of Dooshivishari Agada

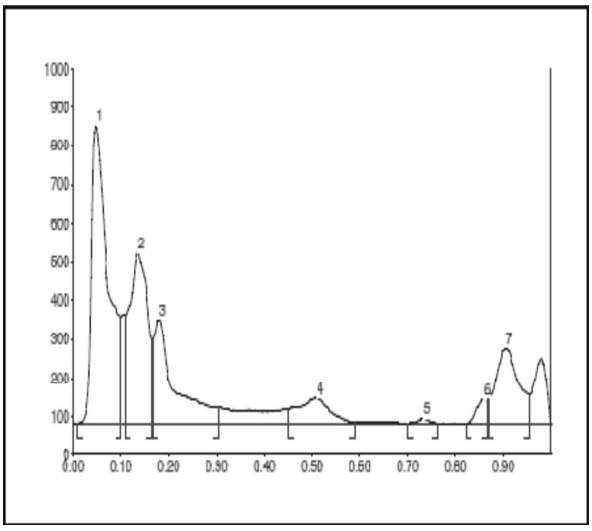
during preparation and by end of preparation it was aromatic may be due the presence of volatile ingredients. DVA was having initially *Katu* and *Madhura* pradhana rasa later at the end of preparation (*Bhavana*) it had *Tikta* and *Kashaya rasa pradhana*. Though DVA has ingredients of equal percentage of rasa Pradhanatha but end result of preparation was *tikta* rasa as evidenced by presence of tannins and phenols in qualitative test. This gives us

Table 8: Illustrates TLC - Profile of DVA with Rf Values With solvent system Toluene: Ethyl Acetate (9:3).

Spots at UV 254 nm SW	Spots at UV 366 nm LW
1. 0.02	1. 0.02- Yellow
2. 0.10	2. 0.03- Brown
3. 0.12	3. 0.06- Light blue
4. 0.17	4. 0.09- Light green
5. 0.22	5. 0.13- Light blue
6. 0.33	6. 0.16- Blackish brown
7. 0.37	7. 0.22- Light Yellow
8. 0.49	8. 0.25- Light blue
9. 0.61	9. 0.30- Violet pink
	10. 0.37- Light blue
	11. 0.49- Light Yellow
	12. 0.58- Fluorescent blue
	13. 0.61- Fluorescent pink
	14. 0.68- Light blue
	15. 0.70- Violet
	16. 0.75- Yellow
	17. 0.77- Violet
	18. 0.80- Fluorescent Blue
	19. 0.84- Violet
	20. 0.87- Light Blue
	21. 0.90- Pink
	22. 0.96- Light Blue

Table 9: HPTLC of Aqueous and Alcoholic extract DVA at 366 nm wavelength





clue that why DVA is told in visha conditions as *Tikta rasa is Vishagna.[8]*

Texture of the pill was smooth indicating the surface uniformity without cracks. This is primary character to assess the quality of pills.[9] Solubility test will indicate about the bioavailability and it was seen that water soluble extract 41.64 %w/w was more in comparison to alcoholic extract 25.76% w/w showing that DVA has more bioavailability in water media.

Presence of inorganic substances in the formulation is indicated by Ash value, which plays important role in standardization, more Ash value denotes higher inorganic substances, in present sample which is slightly high 15.96 % w/w which may be due to presence of Gairika.

Phytochemical tests are done to know the presence of functional group, which play a vital role in expression of therapeutic efficacy. DVA showed presence of Carbohydrates, reducing sugars, proteins, glycosides, steroids, alkaloids and tannins& phenols. Along with these above Organoleptic, Quantitative and Qualitative, preliminary TLC and HPTLC may be considered as reference standards for future validation of this formulation.

Conclusion

Due to increased demand and marketing of the Herbal medicines around the world, it has become a necessary step to take actions in order to set up standards for the herbal medicines. Thus it will maintain safety, efficacy and quality which help not only to preserve this system heritage but also to rationalize the use of natural products in healthcare. As dooshivishari agada is the unique formulation which is widely used in the clinical practice. The present study standards can be set as standards for dooshivihsari agada and here by used for future considerations.

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