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PHYSICO-CHEMICAL STANDARDIZATION AND HPTLC STUDY OF *VARUNASHIGRAVAADI GHANAVATI* – AN *AYURVEDIC* HERBO MINERAL FORMULATION

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ABSTRACT

Introduction

The demand for *Ayurveda* phyto-pharmaceuticals has increased, so an attempt is made to standardize a new pharmaceutical preparation, which is economical in terms of time and mechanical use. The current work is to standardize the finished *Varunashigravaadi Ghanavati* product to confirm its identity, quality and purity. The demand for *Ayurveda* phyto-pharmaceuticals has increased, so an attempt is made to standardize a new pharmaceutical preparation, which is economical in terms of time and mechanical use.

Materials and methods

Here, this preparation was standardised by different parameter such as physico-chemical parameters which includes loss on drying, ash value, extractive value, weight variation, hardness etc and Chromatographic Inspection by HPTLC study. All parameters were assessed with the reference to Standard Parameters of *Ghanavati* (Form of tablet) mentioned in Indian Ayurvedic Pharmacopeia.

Result and Discussion

Result revealed all the physio-chemical as well HPTLC parameters were found within standard limits. The parameters evaluated can be used as reference for further research work.

Conclusion

The analysis of all pharmaceutical parameters is within the allowed range, which can be used as a standard reference for further research and clinical investigations.

KEYWORDS: Physio-chemical parameter, HPTLC study, *Varunshigravadi Ghanavati*

INTRODUCTION

Ayurveda mention two principal for drug preparation, either Use a Single Drug or make a combination of more than two Ingredients according to requirement in clinical entity. Concepts of combination of more than two drugs is known as Polyherbal formulation in modern pharmaceutical science. Ayurveda depicts many formulations for a single compound also, like one can make various formulation of same drug according to compatibility or easy palatability for patients as well. These formulations are named as a *Kwath*, *Fanta*, *Satva*, *Vati* or *Ghanavati*, *Churna*, *Ghrita* or *Avleha* and *Asava-Arista*. Standard preparation protocol is also mentioned in text of classical science with due effect of not properly prepared formulation. Although in many cases, in *Ayurveda* emphasize the standardization principle of different stages (processes and finished products) of medicines, it is well known that has seen unprecedented technological progress. Such formulation of *Ghanavati* made from compound drugs named as a *Varunshigravadi Ghanavati* is evaluated here for its standardization. As, this drug contains drugs which are used in urinary system disorders, so assuming that all drug will combinely act, this final product can be used in urinary system disorders like BPH, Urinary incontinence, Nocturia or hesitancy in micturition etc.

Here, The Aim of Standardization of final product is to ensure the uniformity of the product and to ensure its ideal preparation method, especially with regard to the medical effects. As this *Ghanavati* is made as per the standard method mentioned in classics.

It does not take more than a generation to look back to see the increasing steps that pharmacy has taken towards the analysis of plants and the isolation of certain principles and also, it’s a need of hour to establish a standardization data for Ayurvedic formulation to overcome a blaming on Ayurveda drugs. Such directory is also available with specification of Traditional drug product formulations and its standardization named as an Indian Ayurvedic pharmacopeia.

The present study was therefore undertaken to develop standardization parameter for *Varunashigravaadi Ghanavati* through the Pharmaceutical standards, organoleptic features and HPTLC were carried out after organizing appropriate solvent system.

Material and Method

The final drug (*Varunashigravaadi Ghanavati*) for the study was procured from the Pharmacy of Gujarat Ayurved University, Jamnagar. Pharmaceutical study was carried out in the pharmaceutical chemistry laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar.

Raw ingredients and the part used for Drug preparation was authenticated and identified by Department of *Dravya Guna,* ITRA, Jamnagar. Details are given in table no 1.

1. **Method of Preparation of *Varunashigravaadi Ghanavati*[i]**

Varunashigravaadi Ghanavati was prepared as per classical method by Ingredients like *Varuna, Shigru, Gokshura, Punarnava, Triphala* in equal quantity. Ingredients were soaked in 8 times water for 12 hrs. Then next day, the subject was ignited with mild flame for preparation of *Kwatha* till the mixture reduced to ¼ by boiling. After that *Kwatha* was filtered in another vessel and again heated with mild flame maintaining temperature in between 90 to 100℃ till consistency become solidified. After getting slight solidified consistency, *Sudhha Shilajatu* was added as a binding agent to get solid form and was given a form of *Ghanavati* with the help of pills making machine. Prepared *Ghanavati* were kept in hot air oven for drying and stored in air-tight glass container.

2. **Organoleptic evaluation** Organoleptic evaluation of *Varunashigravaadi Ghanavati* was carried out in the Institute's Pharmaceutical Chemistry Laboratory.

3. **Physico-chemical Evaluation**

Various test for Physical and chemical parameters of *Varunashigravaadi Ghanavati* such as loss on drying, ash number (total ash and acid insoluble ash) and extraction value (water and alcohol), pH value, weight change, hardness, etc was carried out to established a new combination drug which can be accepted globally by following standard procedures of Indian Ayurvedic Pharmacopoeia[ii]

Methods for test:

1. Loss of drying:

2. Ph value:

3. Ash value:

4. extraction value:

5. Weight change

6. Hardness of tablet

4. High performance thin layer chromatography[iii]

HPTLC Aluminium pre-coated plate with Silica gel60 GF254 was used as stationary phase. Methanolic extract of sample 1mg/ml solution was applied on the plate by mean of Camag Linomate V sample applicator fitted with a 100µl Hamilton syringe. The mobile phase consisted of Toluene: Ethyl acetate a ratio of 9:1 v/v. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance in absorbance mode at 254 and 366 nm under control of Win CATS Software (V1.2.1. Camag).

OBSERVATION AND RESULT

Various parameters of the colour, smell, touch and taste of *Varunashigravaadi Ghanavati* have been observed and recorded. Touch was analysed with the help of *Darshana(*sight*), Sparshana(*touch*), Ghrana(*smell*)* and *Rasana(*taste*) Pareeksha* mentioned in *Ayurveda*. The results are shown in Table 2.

Table 1. Ingredients of *Varunashigravaadi Ghanavati*

Sr. no.	Ingredients	Latine name/formula	Quantity	Part used
1	*Varuna*	*Cratae vanurvala* Buch. -Ham	1 part	Stem Bark
2	*Shigru*	*Moringa oleifera* Lam	1 part	Root
3	*Gokshura*	*Tribulus terrestris L.*	1 part	Whole plant
4	*Punarnava*	*Boerhaavia diffusa L*. nom. Cons.	1 part	Root
5	*Triphala* *1.Haritaki* *2.Bibhitaki* *3.Aamla*	 1. *Terminalia chebula* Retz. 2. *Terminalia belerica* L. 3. *Emblica officialis* L.	3 parts	Fruit
6	*Shilajit*	Asphaltum	1 Part	Resin

Table no 2. Organoleptic character of *Varunashigravaadi Ghanavati*

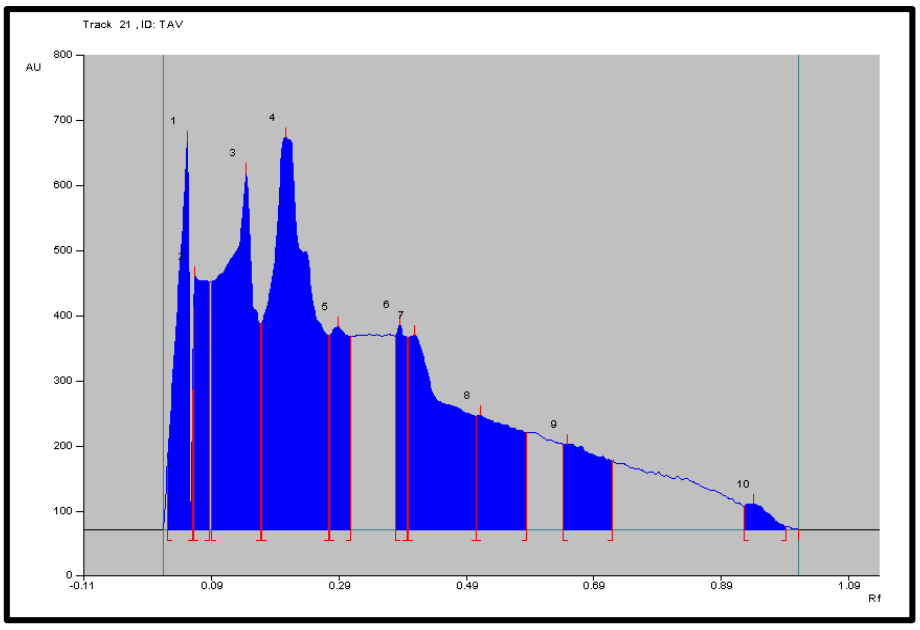
Sr no	Organoleptic character	Result
1	Colour	Black (Krishna)
2	Odour	*Gomutragandhi*
3	Taste	Bitter
4	Touch	Semi solid (*Madhyama*)
5	Dissolving of water	Dissolve
6	Reaction on fire	Burn and give *Lingakar aakriti*

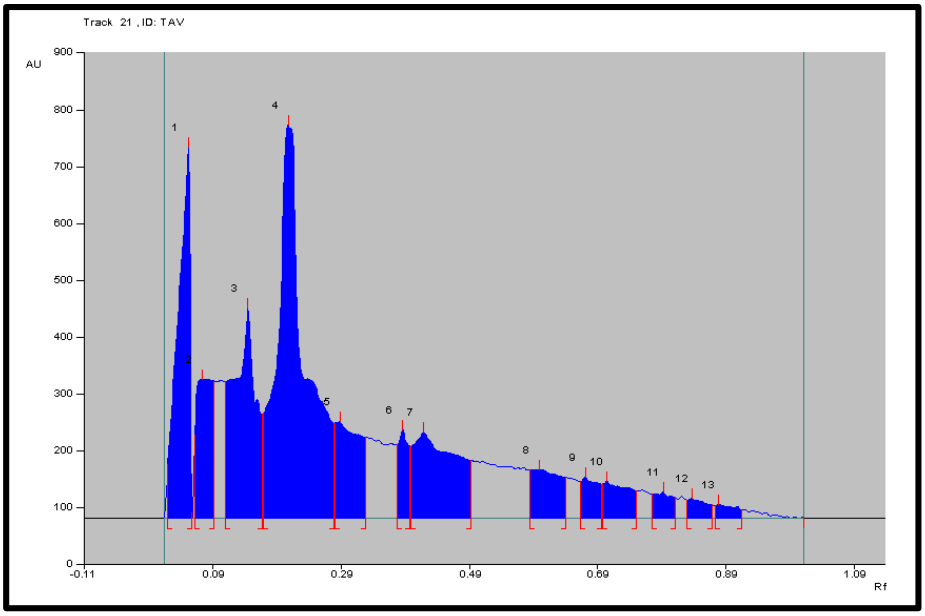
Table no 3. Physico-chemical analysis of *Varunashigravaadi Ghanavati*

Sr no	PARAMETERS	RESULTS
1	Loss on drying (At 110o C temp. %w/w)	6.73
2	Ash Value (% w/w)	26.55
3	Methanol soluble extract value (%w/w)	29.2
4	Water soluble extract value (%w/w)	50.7
5	pH	6.5
6	Weight variation (mg)	511.65(±5%)
7	Hardness (kg/cm2)	4.5

Table No. 4: Results of HPTLC of *Varunashigravaadi Ghanavati.*

UV-254nm		UV-366nm	
No. of Spot	**Max. Rf value**	**No. of Spot**	**Max. Rf value**
1	0.05	1	0.05
2	0.06	2	0.07
3	0.14	3	0.14
4	0.21	4	0.21
5	0.29	5	0.29
6	0.38	6	0.38
7	0.41	7	0.42
8	0.51	8	0.60
9	0.65	9	0.67
10	0.94	10	0.70
		11	0.79
		12	0.84
		13	0.88





DISCUSSION

As Standardization of every new formulation is essential to ensure the quality of formulations, present study showed all parameters within normal limit of *Ghanavati*. Phytochemical analysis showed that Loss on drying was 6.73% w/w as material gains very little moisture during storage, so quality of the product is not affected as too much moisture in the medicine can stimulate the growth of microorganisms. Ash value was found 26.55%, here ash value directly indicates the number of inorganic residues present in the plant. As *Varunashigravaadi Ghanavati* is Herbo mineral drug, inorganic contains also found within normal limit which assured safety intake of drug to patients.

Methanol soluble extract value was 15.77, Water soluble extract value was 31.3. The extracted value gives ideas about the types of chemical parts present in the plant. It has been found that compared with the extraction value of soluble in water, the extraction value soluble in alcohol indicates that the possibility of the presence of highly soluble components in water is higher than the extraction value soluble in alcohol. PH found 6.5, which indicated drugs basic nature which can't harm stomach mucosal flora during intake. Average weight found 511.65 mg and weight variation was generally found within limits of ±5% due to mechanical error. Hardness is 4.5 kg/cm2, which indicates that drug can be easily dissolved by gastric acid for further absorption.

HPTLC is a powerful analysis tool in the field of analysis, which analyse Rf Value. It can provide conclusive evidence for the identity of the compound. The Rf in the table can be used

for the identification of the mobile phase or mobile phase ratio changes, there may be changes. HPTLC results showed that the 10 spots at 254 nm and 13 spots at 366 nm.[iv] The values obtained from of these tests were within the normal range, which indicates that the quality of the product was good and better results can be achieve in particular diseases.

CONCLUSION

Varunashigravaadi Ghanavati phytochemical evaluation showed the specific properties of the ingredients used in the formulation. Organoleptic features, of *Varunashigravaadi Ghanavati* were within the standard range. The analysis of all pharmaceutical parameters is within the allowed range, which can be used as a standard reference for further research and clinical investigations.

REFERENCES

[i] Sharangdhara Samhita, Dr. Brahmanand Tripathi, chaukhambha surbharati prakashan Varanasi; reprint 2019; Sa. M.K, chapter 7, P-130

[ii] Anonymous. The Ayurvedic Pharmacopoeia of India. part 2, vol 2, Appendices 1st ed. New Delhi: Govt. of India Publication. 2008; 233-5.

[iii] Stahl E. Thin-layer chromatography a laboratory hand book. 2nd edition. New York: Springer-Verlag. 1969;125 - 133.

[iv] Alagar Raja M, Shailaja V, David Banji, Rao KN, Selvakumar D. Evaluation of standardization parameters, pharmacogenetic study, preliminary phytochemical screening and in vitro antidiabetic activity of Emblica Officinalis fruits as per WHO guidelines. Journal of pharmacognosy and phytochemistry. 2014; 3(4):21-28.