ISSN 0976 – 3333

Available Online at www.ijpba.info

International Journal of Pharmaceutical & Biological Archives 2015; 6(3): 17 - 20

RESEARCH ARTICLE

Physiochemical Characterization of Shankha Drava

Abhishek K Shukla[1], Kapil Deo Yadav[2], Laxmi Narayan Gupta[3]*

[1]PG Diploma in Ayurvedic Pharamceutics, [2] PhD Scholar, [3]Assistant Professor, Department of Rasa Shastra, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

Received 18 Mar 2015; Revised 08 Jun 2015; Accepted 20 Jun 2015

ABSTRACT

Standardization of raw drugs, processing, finished products, verification of the claims etc., have became major issues, which are to be taken into consideration in order to increase the global acceptability of herbal drugs and also to prove their respective clinical efficacy. After screening of literature it is observed that *Shankha Drava* is used for management of gastrointestinal disorders which is major contributor of various diseases. It is prepared with *Shankha churna, Tankan, Sphatika, Navasadar, Saindhava lavana, Samudra lavana, Vida lavana, Sauverchala lavana, Romaka lavana, Sarji Kshar, Yava kshar* as ingredient and as per principle of *Ark kalpana* (nearer to distillation). Standardization of shankha drava was done at level of ingredient as well as final product with respect to some analytical parameter. At ingredient level it was observed that Sambhar and Souverchal Lavan, Navasadar have chloride ion, whereas Saindhav lavan has chloride and sulphate. Sphatica & Shankha Churna has Sulphate and carbonate respectively whereas both Carbonate and Sulphate was present in Yava & Sarji Kshar. Shankha drava is liquid dosages form with alkaline in nature, specific gravity of 8.03 and refractive index 1.342.

Key words: Shankha Drava, Lavan, Kshar, Shankha.

INTRODUCTION

Concept regarding Standardization and quality control of *Ayurveda* drugs can be traced back to the ancient time [1]. Qualities of finished drugs have been described in classics which were based on their *siddhi lakshan* (which is best indicator of completion of process and quality of product) [2] But due to global demand of *Ayurvedic* product there was need, evaluation of their quality on scientific parameters and they have to be viewed and answered looking at the advancement of science and technology of current scenario. Analysis is very essential to provide an opinion and certify a particular study. This holds good for the science of medicine too. Strictly speaking more over giving an opinion or certifying, the analysis of a medicine is very essential for standardizing and to maintain its quality and efficacy within the accepted limits [3].

Digestive disorders are some of the most common ailments presented to practitioners in both first aid stations and at clinics [4]. By keeping in mind we prepare Shankha Drava, mentioned for management of digestive disorders as per principle of Ark kalpana (nearer to distillation). Here an attempt has been done to standardize Shankha Drava on basis of analytical methodology.

MATERIALS AND METHODS

Pharmaceutical study

Shankha Drava having ingredient like *Shankha churna, Tankan, Sphatika, Navasadar, Saindhava lavana, Samudra lavana, Vida lavana, Sauverchala lavana, Romaka lavana, Sarji kshar, Yava kshar* (**Table 1**) was prepared by principle of ark kalpana i.e. distillation method at temperature of 70 ^{0}C for 7 hours [5].

Analytical study [6]

Flame test

The classic technique is to use a clean wire loop made out of platinum or nickel-chromium (nichrome) wire, dip the loop into the powder or solution of an ionic (metal) salt to be tested, and then placed into the hottest portion (blue part of gas burner flame) of a flame. The resulting color of the flame is observed and this may be an indication of the presence of a particular ion (Table 1).

***Corresponding Author:** Laxmi Narayan Gupta, **Email:** narayanlaxmi68@rediffmail.com

Specific gravity

A Pycnometer was used for this parameter, this apparatus was firstly cleaned, dried and weight at room temp. It was filled up to the mark with water at 25 ^{0}C and weight was taken. Then the bottle was cleaned, rinsed and filled with sample at the same temperature and weighted. The specific gravity was determined by dividing weight of sample expressed in gm. by the weight of water expressed in gm.

Total solid contents

5 ml. of each samples of *Shankha Drava* were taken separately in a previously dried and weighed dish, evaporated on water bath and further dried in an oven at 80-100 ^{0}C till constant weight. From the weight of the residue obtained the percentage of total solid content in the sample was determined and expressed as percentage w/w.

Ash value

Ash content is a measure of the amount of inorganic compound present in sample. To determine the ash content, measured amount of dry solid obtained from *Shankha Drava* sample was taken in a tared silica dish and incinerated by gradually increasing the heat, not exceeding dull red heat, until free from carbon. Then the dish was allowed to cool in a desiccater and weighed. The percentage of ash content (w/w) was calculated with reference to 10 ml. of *Shankha Drava.*

RESULTS

Sambhar and Souverchal Lavan, Navasadar have chloride ion, whereas Saindhav lavan has chloride and sulphate, Sambhar Lavan contain Chloride & carbonate and Vida lavan has chloride & carbonate ion. Sphatica and Shankha Churna have Sulphate and carbonate respectively whereas both Carbonate and Sulphate was present in Yava & Sarji Kshar (**Table 2 & 3**). pH and specific gravity of Shankha drava is 8.03, 7.85, 8.03 and 1.0044723, 1.0044723, 1.00268834 respectively for Sample I, II & III. Solid content and Ash value of all three sample of Shankh drava were 0.05, 0.02, 0.05 and 0.03, 0.04, 0.04 respectively along with Refractive index 1.342, 1.346, and 1.342 (**Table 4**).

Table 1: Showing effect of heat on ingredient of *Shankha Drava*

S. No	Sample	Observation of heat
1	*Souverchal Lavan*	Reddish brown colour changed to brownish black
2	*Samudra lavan*	Cracking sound appears
3	*Saindhav lavan*	No change
4	*Sambhar Lavan*	Cracking sound appears
5	*Vida lavan*	No change
6	*Navasadar*	White sublimate
7	*Tankan*	Cracking sound appears
8	*Sphatica*	Crystal changes in to liquid state
9	*Sarji kshar*	Cracking sound appears
10	*Yava kshar*	No change
11	*Shankha*	Cracking sound appears

Table 2: Acid Radical Analysis of *Panch Lavan* used in preparation of *Shankha Drava*

Dravya	Chemical test	Observation	Inferences
Souverchal Lavan	Sample + Conc. H2SO4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H2SO4	No reaction	Carbonate absent
	Aqueous solution of Barium chloride added in sample	No reaction	Sulphate absent
Samudra lavan	Sample + Conc. H2SO4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H2SO4	No reaction	Carbonate absent
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Saindhav lavan	Sample + Conc. H2SO4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H2SO4	No reaction	Carbonate absent
	Aqueous solution of barium chloride added in sample	White ppt obtained in soluble in dil. HCl	Sulphate may be
	Aqueous solution of lead acetate added in sample	White ppt obtained	Sulphate present
Sambhar Lavan	Sample + Conc. H2SO4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H2SO4	Brisk Effervescence	Carbonate may be
	Effervescence passes through lime	Milky white precipitate	Carbonate present
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Vida lavan	Sample + Conc. H2SO4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH4OH taken over mouth	No reaction	Chloride absent
	Sample + Conc. H2SO4	Effervescence, colourless Gas	Carbonate may be
	Effervescence passes through lime	Milky white precipitate	Carbonate present
	Aqueous solution of Barium chloride added in sample	No reaction	Sulphate absent

Table 3: Showing Acid Radical Analysis of ingredients used in preparation of *Shankha Drava*

Dravya	Chemical test	Observation	Inferences
Navasadar	Sample + Conc. H_2SO_4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH_4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H_2SO_4	No reaction	Carbonate absent
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Tankan	Sample + Conc. H_2SO_4	Effervescence, colourless Gas	Chloride may be

	Glass rod wet with NH_4OH taken over mouth	No reaction	Chloride absent
	Sample + Conc. H_2SO_4	No reaction	Carbonate absent
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Sarji kshar	Sample + Conc. H_2SO_4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH_4OH taken over mouth	White fume appears	Chloride present
	Sample + Conc. H_2SO_4	Brisk Effervescence,	Carbonate may be
	Effervescence passes through lime	Milky white precipitate	Carbonate present
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Yava kshar	Sample + Conc. H_2SO_4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH_4OH taken over mouth	White fume appears	Chloride present
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent
Sphatica	Sample + Conc. H_2SO_4	Effervescence, colourless Gas	Chloride may be
	Glass rod wet with NH_4OH taken over mouth	No reaction	Chloride absent
	Sample + Conc. H_2SO_4	No reaction	Carbonate absent
	Aqueous solution of barium chloride added in sample	White ppt obtained in soluble in dil. HCl	Sulphate may be
	Aqueous solution of lead acetate added in sample	White ppt obtained	Sulphate present
Shankha	Sample + Conc. H_2SO_4	Efferevescence, colourless Gas	Chloride may be
	Glass rod wet with NH_4OH taken over mouth	No reaction	Chloride absent
	Sample + Conc. H_2SO_4	Brisk Effervescence,	Carbonate may be
	Aqueous solution of barium chloride added in sample	No reaction	Sulphate absent

Table 4: Showing physicochemical property of *Shankha Drava*

S. No	Sample	Organoleptic character			Physicochemical				
		Odour	Taste	Colour	Ph	Solid content	Specific gravity	Ash value	Refractive index
	Sample I	Pungent	Salty	Colourless	7.85	0.02	1.0026834	0.03	1.346
	Sample II	Pungent	Salty	Colourless	8.03	0.05	1.0044723	0.04	1.342
	Sample III	Pungent	Salty	Colourless	8.03	0.05	1.0044723	0.04	1.342

DISCUSSION

Analytical measurement encompasses two essential criteria – utility and reliability [7]. Utility means that analytical results must allow reliable decision making Quality, results reflects adequacy (or inadequacy) of a method to fulfils requirements or fit for particular analytical purpose. . The need for reliability of analytical data is stressed by the fact that measurement results will be responsible for decision making. Unreliable results bring a high risk of incorrect decisions and may lead to higher costs, health risks, and illegal practices. [8,9] Analytical parameters provide information about the total mineral content are based on the fact that the minerals (the "analyte") can be distinguished from all the other components (the "matrix") within a sample in some measurable way. Organoleptic characters are subjective, sensory judgments based on the experience of the evaluator. They can involve eyeing, feeling, chewing and tasting of products to judge for appearance, color, integrity, texture and flavors. The value of these judgments depends on the experience of the evaluator and this experience is helpful in assessment of organoleptic character of substances. On the basis of these experiences it was observed that all three sample of Shankha Drava, which was colourless liquid have pungent smell and salty in taste. Specific product experience is necessary for identification of substance because of sensory attributes so that in a commercial setting this parameter helpful comparison samples, thus the evaluator must learn and reinforce a memory for comparable judgments [10]. The pH value indicates the relative conc^n of hydrogen ion in the solution compared with that of standard solution that represents the relative acidity or alkalinity of solution. The pH of *Shankha* was 8.03, 7.85, and 8.03 it indicate that *Shankha Drava* has alkaline in nature. This may be helpful for treatment of acid-peptic disorders. Specific gravity indicates the ratio of the density of a substance to the density of water [11]. There were no. significant changes observed in relation to specific gravity of all three sample of *Shankha Drava*, It may be was due to the low concentration of substrates. The total solids content is a measure of the amount of solids suspended or dissolved in a process liquid or slurry.]. The total solids content of samples is used to convert the analytical results obtained on another basis to that of a dry weight basis. Total solid is applied to the residue obtained where the prescribed amount of the preparation is dried to constant weight. [12]Ash is the inorganic residue remaining after the water and organic matter have been removed by heating in the presence of oxidizing agents, which provides a measure of the total amount of minerals within a sample. If ash value found more than it is supposed to adulteration of sand or soil and it found less than it is supposed to adulteration of husk, but ash valu of *Shankha drava* was within normal limit this indicate no adulteration was present in it. Refractive index, measure of the bending of a ray of light when passing from one medium into another. It is an important physical parameter, which is widely used in chemistry to identify the liquid, or its purity. It index also depends on the

density of the measured sample, which is affected by its temperature. Typically, it decreases with the decreasing density i. e. used to determine the concentration of solutions. The Refractive index of Shankha Drava is more than water this indicate that Shankha Darva having higher density to water. This may be possible that during processing of Shankha Drava active part of ingredient may converted in to liquid state and goes along with water which is major cause of increasing refractive index of Shankha Drava.[13]

CONCLUSION

Shankha Drava, liquid dosages form used for treatment of Acidity, indigestion and others gastrointestinal disorders. Ingredient mainly contains Chloride, sulphate and carbonate as acid radical. It is Colourless liquid, alkaline in nature and contains active ingredient of ingredient that be present in liquid state.

REFERENCES

1. Kalsariya BD, Patgiri BJ, Prajapati PK. Standard manufacturing procedure for syrup and tablet forms of *Jwarahara Dashemani* Ayu. 2010 Apr-Jun; 31(2): 255–259.
2. Snigh N, Chaudhary A. comparative review study of *Sneha Kalpana* (*Paka*) vis-a-vis liposome Ayu. 2011; 32(1): 103–108.
3. C Ventola CL Challenges in Evaluating and Standardizing Medical Devices in Health Care Facilities P T. 2008 ; 33(6): 348–359.
4. Available on http://7song.com/files/An%20Herbalist%E2%80%99s%20 View-digestive%20System.pdf last assessed on 20.04.2015.
5. Sadanada Sharma , Rasa tarangini, Edited by , Kasinath shastry, Motilal Banarasi Das, Varanasi, Ed 11th , 1979, Reprint 2012, p772.
6. Lohar, Protocal for Testing of Ayurveda, Siddha and Unani medicine page 124- 126, Department of Ayush, Ministry of health and family welfare, pharmacopoeial laboratory for Indian medicines, Ghaziabad.
7. Van Zoonen P, Hoogerbrugge R, Gort SM,.Van de Wiel HJ, Van 't Klooster HA. Some practical examples of method validation in the analytical laboratory Trends Anal. Chem. 1999;18: 584.
8. Battaglia R. Quality assurance in a food analytical laboratory Accred. Qual. Assur. 1996;1: 256-61.
9. R.J. Mesley, W.D. Pocklington, R.F. Walker, Analyst (Cambridge, UK) 116 (1991) 975
10. Dominique V, Christelle P, Dzung HN, Delores C, Hervé A. Integrating Sensory Evaluation Into Product Development An Asian Perspective, Summer Program In Sensory Evaluation 2012 3d International Symposium Vietnam, July 24-26, 2012.
11. Available on https://en.wikipedia.org/wiki/Relative_density last assessed on 20.04.2015.
12. Available on https://books.google.co.in/books?isbn=8170215609 last assessed on 20.04.2015.
13. Available on http: //novyweb. fpharm.uniba.sk/f ileadmin/user_upload /english/Fyzika/ Refractive_index.pdf last assessed on 20.04.2015.