ISSN 2349-7203

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

HUMAN

Human Journals
Review Article
July 2015 Vol.:3, Issue:4

Standardizing Technique of Sneha Kalpana- A Critical Review

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

***Pankaj Rai**

** Assistant Professor, Department of Rasa Shastra and Bhaishjaya Kalpana ,*
Major S D Singh Ayurvedic Medical College and Hospital,
Farrukhaabad, Uttar Pradesh 209601, India.

Submission: 10 July 2015
Accepted: 15 July 2015
Published: 25 July 2015

www.ijppr.humanjournals.com

Keywords: Ayurvedic pharmaceutics, standardization, analytical techniques, Sneha kalpana

ABSTRACT

Standardization is a burning topic in Ayurvedic drug industry today. Tremendous work is going on Ayurvedic drug standardization to prove its reproducibility, compatibility, and safety on modern parameters. Concept of medicated taila (oil) and ghrita is well established in Ayurvedic pharmaceutics under Sneha kalpana for therapeutic purposes. There is sound description of its various method of preparation along with shelf life period in Ayurveda. Implication of latest analytical techniques is the demand of time to standardize different formulations of taila and ghrita. In this article there is an attempt to analyze the probable analytical parameters which may prove useful for the standardization of Sneha kalpana.

INTRODUCTION

Swarasa (juice), Kalka (paste), Kwatha (decoction), Hima (cold infusion) & Phanta (hot infusion), are the basic pharmaceutical preparations described in Ayurvedic Pharmaceutics. These are used since antiquity in some form or other to treat various diseases. Thus in this way they are serving to human species and also fulfilling the aim of Ayurveda to keep human being healthy. Acharya Charaka mentioned them as Panchvidhakasayakalpana[1] first time. Acharya Charaka has given opinion that the drug having quality to produce arogya is the best drug[2]. Keeping this view in the mind a number of preparations have been derived from these five basic preparations e.g. Asavarishta (fermentation), Lepa (paste), Churna (powder) Sneha kalpana (fatty preparation), Vati (pills) etc.

Sneha kalpana is a process where various things like decoction, paste, liquids and perfuming substances are employed for preparation of oleaginous medicaments.

Generally any medicated ghrita or taila is prepared by mixing 1 part of kalka dravya (Paste of herbs), 4 parts of ghee/oil and 16 parts of drava (liquid) together & heat by mandagani. Then it is filtered and stored[3].

A Standard is numerical value which quantifies the parameter and thus denotes the quality and purity of a material. Standardization is the process of developing and agreeing upon technical standards. A standard is a document that establishes uniform engineering or technical specifications, criteria, methods, processes, or practices. Standardization is the process of establishing a technical standard, which could be a standard specification, standard test method, standard definition, standard procedure (or practice), etc. In the process of standardization there is development and implementation of concepts, doctrines, procedures and designs to achieve and maintain the required levels of compatibility, interchangeability or commonality in the operational, procedural, material, technical and administrative fields to attain interoperability.

The need for the quality control methods for the Ayurvedic drugs, the drugs prepared according to the ancient Indian system of medicine is must due to commercialization of the Ayurvedic pharmacies during the current century and also due to the inclusion of the Ayurvedic drugs under the Drugs and Cosmetic Act.

The analytical parameters that can be supportive to standardize Sneha kalpana are as follows:

Loss on drying at 40^0C

Loss on drying signifies the amount of residual water in the finished product. Ideally it should be nil in case of ghrita and taila preparation.

Color and Odour[4]

Color and odour are the examination which can be done by the sense organs. Any deviation from the normal colour (dark colour) and any unpleasant smell in the sample signify that due to some chemical reaction sample is changing its normal phenomenon.

Rancidification[5]

Rancidification is the decomposition of fats, oils and other lipids by hydrolysis or oxidation, or both. Hydrolysis will split fatty acid chains away from the glycerol backbone in glycerides. These free fatty acids can then undergo further auto-oxidation. Oxidation primarily occurs with unsaturated fats by a free radical-mediated process. These chemical processes can generate highly reactive molecules in rancid foods and oils, which are responsible for producing unpleasant and noxious odors and flavors. These chemical processes may also destroy nutrients in food. Antioxidants are often added to fat-containing foods in order to retard the development of rancidity due to oxidation. Rancidification can be decreased, also by storing fats and oils in a cool, dark place with little exposure to oxygen or free-radicals, since heat and light accelerate the rate of reaction of fats with oxygen.

Refractive index[6]

The refractive index (or index of refraction) of a medium is a measure for how much the speed of light (or other waves such as sound waves) is reduced inside the medium. It is the ratio of the velocity of light in a vacuum to its velocity in the substance. Refractive index is a fundamental physical property of a substance often used to identify a particular substance, confirm its purity, or measure its concentration. Refractive index is used to measure solids (glasses and gemstones), liquids, and gases. Most commonly it is used to measure the concentration of a solute in an

aqueous solution. A refractometer is the instrument used to measure refractive index. For a solution of sugar, the refractive index can be used to determine the sugar content

Viscosity[7]

Viscosity is a measure of the resistance of a fluid which is being deformed by either shear stress or extensional stress. Viscosity of fluid varies with temperature and pressure. The viscosity of simple liquids decreases with increasing temperature & increases under very high pressures. E.g. Honey and syrups can be made to flow more readily when heated. Some gels and pastes behave like a fluid when worked or agitated and then settle into a nearly solid state when at rest. Toothpaste is another example of a material whose viscosity decreases under stress. Toothpaste behaves like a solid while it sits at rest inside the tube. It will not flow out spontaneously when the cap is removed, but it will flow out when you put the squeeze on it.

Saponification value[8]

Saponification value (or "saponification number", also referred to as "sap" in short) represents the number of milligrams of potassium hydroxide or sodium hydroxide required to saponify 1g of fat under the conditions specified. It is a measure of the average molecular weight (or chain length) of all the fatty acids present. Saponification value is the directly proportional to the fatty matter content.

Iodine value

The iodine value (or "iodine adsorption value" or "iodine number" or "iodine index") in chemistry is the mass of iodine in grams that is consumed by 100 grams of a chemical substance. One application of the iodine number is the determination of the amount of unsaturation contained in fatty acids. This unsaturation is in the form of double bonds which react with iodine compounds. The higher the iodine number, the more unsaturated fatty acid bonds are present in the fat. It decreases its stability.

Acid value[10]

Acid value (or "neutralization number" or "acid number" or "acidity") is the mass of potassium hydroxide (KOH) in milligrams that is required to neutralize one gram of chemical substance.

The acid number is a measure of the amount of carboxylic acid groups in a chemical compound, such as a fatty acid, or in a mixture of compounds as oil-fats rancidify, triglycerides are converted into fatty acids and glycerol, causing an increase in acid number.

Free fatty acids[11]

Free fatty acids (FFA) result from hydrolysis of fats due to the action of lipase enzyme. More number of FFA results due to the reason that Ghrita or Taila preparations are damaged or become moist.

Peroxide value[12]

The peroxide value is defined as the amount of peroxide oxygen per 1 kilogram of fat or oil. The peroxide value of an oil or fat is used as a measurement of the extent to which rancidity reactions have occurred during storage. The double bonds found in fats and oils play a role in autoxidation. Oils with a high degree of unsaturation are most susceptible to autoxidation. The best test for autoxidation (oxidative rancidity) is determination of the peroxide value. Peroxides are intermediates in the autoxidation reaction. Autoxidation is a free radical reaction involving oxygen that leads to deterioration of fats and oils which form off-flavours and off-odours. Peroxide value, concentration of peroxide in an oil or fat, is useful for assessing the extent to which spoilage has advanced.

Unsaponifiable matter[13]

Unsaponifiable matter is the non fatty matter, which is compound other than glycerides and fatty acids that remain soluble in the fat. In order to ascertain whether any plant constituent other than fats has been transferred to the medicated oil from the drug during processing estimation of unsaponifiable matter is performed because it is assumed that the active ingredient from the vegetable drugs pass into the Oil/ Ghrita under the condition it is prepared.

Thin Layer Chromatography[14]

TLC is a simple, quick, and inexpensive procedure that gives a quick answer as to how many components are in a mixture. TLC is also used to support the identity of a compound in a mixture when the Rf of a compound is compared with the Rf of a known compound (preferably

both run on the same TLC plate). The Rf value is the retention factor, or how far up a plate the compound travels

High Performance Thin Layer Chromatography[15]

This is an invaluable quality assessment tool for the evaluation of drugs based on herbal origin. It is a form of column chromatography used frequently in biochemistry and analytical chemistry to separate, identify, and quantify compounds. It allows for the analysis of a broad number of compounds both efficiently and cost effectively**.** HPTLC utilizes a column that holds chromatographic packing material (stationary phase), a pump that moves the mobile phase(s) through the column, and a detector that shows the retention times of the molecules. Retention time varies depending upon the interactions between the stationary phase, the molecules being analyzed, and the solvent(s) used.

DISCUSSION

The preparations used in Ayurveda have to be standardized in order to get the optimal concentration of known active constituents and in preserving their activities on various physicochemical parameters discussed in the paper. Analysis of these parameters gives knowledge regarding various aspects of formulations prepared from Ghrita/Taila. Analysis of Loss on drying signifies the amount of residual water in the finished product as water content in the formulations degraded its quality. Any deviation from the normal colour and odour in the sample signify that due to some chemical reaction sample is changing its normal phenomenon. Estimation of Rancidification tells about the level of decomposition of Ghrita/Oil by hydrolysis or oxidation, or both. Refractive index used to identify a particular substance, confirm its purity, or measure its concentration. Determination of Saponification value, Iodine value, Acid value, free fatty acid and peroxide values reveal the quality and potency of the drugs. TLC and HPTLC give the knowledge regarding the components of formulations.

CONCLUSION

Standardization is the process of establishing a technical standard, which could be a standard specification, standard test method, standard definition, standard procedure (or practice), etc. The need for the quality control methods for the Ayurvedic drugs is must due to commercialization of

the Ayurvedic pharmacies during the current century and also due to the inclusion of the Ayurvedic drugs under the Drugs and Cosmetic Act.

Data obtained from the above parameters may be used to fix the standards for the formulations of Sneha (Ghrita/Taila). This fixation of different standards will be ultimately helpful to standardize Sneha kalpanas

REFERENCES

1. Pt. Kashinath Shastri, Acharya Charaka's Charaka Samhita, Part I,Chaukhamba Sanskrit Samsthana, 8th Edition Page No 67
2. Pt. Kashinath Shastri, Acharya Charaka's Charaka Samhita, Part I ,Chaukhamba Sanskrit Samsthana, 8th Edition Page No. 193.
3. Dr. Shailaja Srivastava, Acharya Sarngadhar's Sgarngdhar Samhita, Chaukhamba Orientallie, 3rd Edition, 2003, Page no. 215.
4. Dr. Shailaja Srivastava, Acharya Sarngadhar's Sgarngdhar Samhita, Chaukhamba Orientallie, 3rd Edition, 2003, Page no. 217.
5. Erich Lück etall, Chapter, 3. Food Additives,Ullmann's Encyclopedia of Industrial Chemistry 2000.
6. Kinsler, Lawrence E. Fundamentals of Acoustics. John Wiley., 2000, p. 136.
7. Remington's 298
8. Remington's 425
9. Firestone D et all, Determination of the iodine value of oils and fats: summary of collaborative study [9] J AOAC Int. 1994 May-Jun;77(3):674-6.
10. Kardash, E. and Tur'yan, Y. I.etall, Acid Value Determination in Vegetable Oils by Indirect Titration in Aqueous-alcohol Media. Croat. Chem. Acta, 2005, 78:1:99-103
11. S. A. Mahesar etall, Analytical approaches for the assessment of free fatty acids in oils and fats, *Anal. Methods*, 2014,**6**, 4956-4963.
12. M.M. Chakrabarty, Chemistry And Technology of Oils And Fats, Allied Publishers Pvt. Ltd , 2003.
13. A. G. Stillwell etall, Method for Determining Unsaponifiable Matter in Oils and Fats.*J. Am. Chem. Soc*., 1908, *30* (9), pp 1509–1510
14. Harry W. Lewis and Christopher J. Moody Experimental Organic Chemistry: Principles and Practice (Illustrated ed.). WileyBlackwell. 1989, pp. 159–173.
15. Mahesh Attimarad etall, High-performance thin layer chromatography: A powerful analytical technique in pharmaceutical drug discovery, Pharm Methods. 2011 Apr-Jun; 2(2): 71–75.