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Physico-chemical Analysis of *Tangashree Ghrita*

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ABSTRACT

Quality of the drug is basic need of the era, Analytical tests are helpful to overcome the impurity or substandard of drugs. By following these tests we can ensure the qualities of drugs and promise the good result in treating the disease. **Materials and methods:** Physico-chemical studies like Refractive index, Acid value, Saponification value, Iodine value and moisture content were carried out as per the WHO guidelines, Ayurvedic Pharmacopoeia and Indian Pharmacopoeia. **Conclusion:** Standardization tests done on *Tangashree Ghrita* are useful in authentication and ensuring the quality of the same.

Key words: *Tangashree Ghrita*, Analytical tests, Physico-chemical, Standardization.

INTRODUCTION

In the present era qualities of drug is more important in treating the disease. Good quality of drug has more value in present life style. To achieve good quality in the medicine we have to select good quality of raw drugs and also good manufacturing practice, storage etc. after following all these steps some times qualities of that particular drug are not known until analyzed. To overcome these, there are many analytical tests mentioned with standard values.^[1] If prepared medicament passing these tests can be considered as good quality. To achieve the goal we conducted analysis of *Tangashree Ghrita*^[2] to know the quality of *Ghrita*.

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For this, selected both physical and chemical analysis and followed standard tests for this *Ghrita*. Assessment of the qualities of *Ghrita* is done before treating the disease.

MATERIALS AND METHODS

Procurement of drugs

Tangashree Ghrita was procured from GMP certified Vaidyaratnam Oushadhashala, Trissur.

Analytical Study

To ensure the quality of the *Tangashree Ghrita*, the analytical methods were applied to the sample, which was procured from GMP certified Ayurveda pharmacy. *Ghrita* was analyzed to obtain parameters like organoleptic characters, moisture content, saponification value, iodine value, acid value and refractive index at 40°C.

Organoleptic characters^[3]

The organoleptic characters of *Tangashree Ghrita* are mentioned in below table. The *Tangashree Ghrita* had greenish yellow color, pleasant in smell, slightly bitter in taste and greasy in touch.

Moisture Content^[4]

2g. of powdered test sample is weighed. Placed in china/glass dish and dried in oven at 100 - 105°C. The

sample is taken out, it is cooled in desiccators and loss in weight is recorded. This procedure is repeated till constant weight is obtained.

- Loss on drying (%) = Loss in weight x 100 / w.
- Where 'W' is = Weight of the drug powder in gram

Saponification value^[5]

2g. of the substance was weighed in tared 250ml round bottom flask. 25ml of the alcoholic solution of KOH was added and a reflux condenser was attached. Kept it for boiling on water bath for 1hr, the contents of the flask was rotated frequently. The flask was cooled and 1ml phenolphthalein solution was added and excess of alkali titrated with 0.5N HCl. The number of ml (a) required was noted. The experiment was repeated with the same quantities of reagents in the same manner omitting the substance. The number of ml required (b) was noted. Calculation was done by the above values, using standard formula.

Iodine value^[6]

The sample was accurately weighed in a dry iodine flask. Dissolved with 10ml of CCl₄, 20ml of iodine monochloride solution was added. Stopper was inserted, which was previously moistened with solution of potassium iodide and flask was kept in a dark place at a temperature of about 17°C for 30min. 15ml of potassium iodide and 100ml of water was added and shaken well. This was titrated with 0.1N Sodium thiosulphate, starch was used as indicator. The number of ml of 0.1N sodium thiosulphate required (a) was noted. The experiment was repeated with the same quantities of reagents in the same manner omitting the substance. The number of ml of 0.1N sodium thiosulphate required (b) was noted. Calculation was done by using above readings.

Acid value^[7]

10g. of sample was weighed in a conical flask. Added 50ml of acid free alcohol-ether mixture (25 + 25ml) previously neutralised by the addition of 1ml of Phenolphthalein solution and titrated against 0.1N potassium hydroxide solution. End point was the

appearance of pale pink colour which persists for 15sec. repeated the experiment twice to get concordant values.

Refractive index^[8]

Placed a drop of *Tangashree Ghrita* on the prism and adjusted the drive knob in such a way that the boundary line intersects the separatrix exactly at the centre. Noted the reading.

OBSERVATION AND RESULTS

Table 1: Showing organoleptic characters of *Tangashree Ghrita*.

SN	Organoleptic characters	Results
1.	Colour	Greenish yellowish
2.	Odour	Pleasant
3.	Taste	Slightly bitter
4.	Touch	Greasy

Table 2: Showing chemical analysis of *Tangashree Ghrita*.

SN	Physico-chemical Parameters	Results
1.	Moisture content	1.052%
2.	Saponification value	182.778
3.	Iodine value	44.441
4.	Acid value	1.4674
5.	Refractive index at 40°C.	4.227

DISCUSSION

Saponification value

Low and high saponification values are indicative of Long-chain fatty acids (LCFAs) and short-chain fatty acids (SCFAs) respectively. Short-chain fatty acids (SCFAs) are main fuels for colonocytes particularly at

distal colon. Deficiency in short-chain fatty acids (SCFAs) leads to ulcerative colitis.

Iodine value

Iodine value determines the unsaturated fatty material present in the *Ghrita*. Higher the iodine value is indicative of more the unsaturated bonds present in the fat. Unsaturated fat has no adverse bang on the blood lipids. It also improves the nutritional status and reduces systemic inflammation.

Acid value

The acid value indicates the free fatty acid (FFA) present in the *Ghrita*, which is related to its stability. Formation of free fatty acid might be an important measure of rancidity for the *Ghrita*. The fatty acid profile affects the shelf-life, flavor and the stability of the *Ghrita*. Higher the acid value is represents the lower the stability of *Ghrita*.

Refractive index at 40°C

Refractive index is the ratio of the velocity of light in a vacuum to its velocity in the substance. It is a fundamental physical property of a substance often used to identify substance, confirm its purity and measure its concentration. More the Refractive index, there will be more concentration of light which facilitates rancidification of *Ghrita* i.e. decomposition of *Ghrita*.

CONCLUSION

It is concluded from above analytical parameters that *Ghrita* is under normal limits as per standards. Hence, the average values of the analytical parameters may be used for quality assessment and standardization of *Tangashri Ghrita*.

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