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Research Article

PHARMACOGNOSTICAL AND PHYSICOCHEMICAL ANALYSIS OF DRAKSHADI GHRITA – AN AYURVEDIC POLYHERBAL FORMULATION

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Abstract

Drakshadi Ghrita is a polyherbal formulation indicated especially in eye disorders. Based on its pharmacological properties, it is used successfully in treatment of dry eye syndrome. Present study deals with the pharmacognostical identification of ingredients of Drakshadi Ghrita and its physico-chemical analysis. Pharmacognostical study containing both macroscopic and powder microscopy of raw drug revealed the quality and genuineness of all the constituents of Drakshadi Ghrita. Organoleptic features of coarse powder made out of the crude drugs were within the standards prescribed. Specific Gravity of Drakshadi Ghrita was found to be 0.919, Acid value 0.075, Refractive Index 1.464 at room temperature, Iodine value 32.81 and Saponification Value was 186.24.

Key words: Drakshadi Ghrita; Pharmacognostical; Physicochemical; Organoleptical; Dry eye syndrome.

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INTRODUCTION

Eye disorders need a systemic approach for cure from the root. Though local therapies like Anjana, Tarpana etc. are widely used in Shalakya parlance of Ayurvedic management, importance of internal medications remains imperative. Drakshadi Ghrita is one such formulation explained in Ayurvedic classics in treatment of Timira.[1] Shushkakshipaka i.e. Dry eye syndrome is a clinical entity wherein vitiation of Vata- Pitta[2] or Rakta[3] is observed. Most of the drugs in Drakshadi Ghrita are having Vata-Pittahara and Raktaprasadana (blood purifier) properties. Thus it may prove beneficial in treatment protocol of Dry eye syndrome. In view of severe undesirable side effects of synthetic agents, there is growing focus to follow systematic research methodology and to provide scientific basis for the traditional herbal medicines that are claimed to possess effect in eye disorders. The first step for scientifically based research is to provide quality standardization of drug. With this background the present study was undertaken to ascertain the authenticity of all the ingredients of Drakshadi Ghrita and presence of components as recommended through pharmacognostical study and physicochemical analysis of Drakshadi Ghrita.[4]

Collection of Raw Drug

Raw drugs were collected from the Pharmacy, I.P.G.T. & R.A., G.A.U., Jamnagar. Only Pundrahva (*Saccharum officinarum)* was collected from rural farms of Pune district of Western Maharashtra at the time of preparation of drug. All these were identified and authenticated in Pharmacognosy Laboratory, IPGT and RA, Gujarat Ayurved University, Jamnagar. Ghrita (Cow's ghee) was procured from Khadi Gramodyoga Bhandar, Jamnagar and Drakshadi Ghrita was prepared in Pharmacy of Gujarat Ayurved University, Jamnagar.

Method of preparation of Drakshadi Ghrita

After collecting all the ingredients of Drakshadi Ghrita (Table 1), in a large vessel Go-Ghrita was poured, when it liquefied under moderate flame, Kalka of Draksha, Chandana, Manjishtha, Ashwagandha, Vidari, Sita (Sharkara), Shatavari, Pundrahva, Madhuka, Utpala was added, followed by addition of cow milk. To get final product, the contents were subjected to moderate heat till up to Sneha Siddhi (properly prepared medicated Ghee) features were observed.[5]

Pharmacognostical evaluation of ingredients of Drakshadi Ghrita Organoleptic study

Individual powders were subjected for various sensory characters like colour, taste, odour etc., and were carefully noted down.[6]

Powder microscopy

In certain limits its possible to analyze the finished products for the pharmacognosy i.e. Compound formulations like Choorna (powder), Vati (tablet), Kalka (paste) etc. It was difficult to analyze the Ghrita to find out the cellular level of raw drugs. In this study as Drakshadi Ghrita was made from Kalka (paste) of Draksha, Chandana, Manjishtha, Ashwagandha, Vidari, Sita (Sharkara), Shatavari, Pundrahva, Madhuka, Utpala thus raw drugs powders individually were studied separately with and without staining. The microphotographs were taken under Corl zeiss Trinocular microscope attached with camera.[7][8]

Physico-chemical study

Drakshadi Ghrita was analyzed using various standard physico-chemical parameters such as Acid value, saponification value, Refractive Index value, iodine value, specific gravity at

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Table 1: Ingredients of Drakshadi Ghrita

Drug Name	Botanical name	Part used	Quantity
Draksha	*Vitis vinifera*	Fruit	468.75 g
Chandana	*Santalum album*	Heart wood	468.75 g
Manjishtha	*Rubia cordifolia*	Stem	468.75 g
Ashwagandha	*Withania somnifera*	Root	937.50 g
Vidari	*Pueraria tuberose*	Tuber	468.75 g
Sita (Sharkara)	*Saccharum officinarum*	Stem	468.75 g
Shatavari,	*Asparagus racemosus*	Root	937.50 g
Pundrahva	*Saccharum officinarum*	Root	468.75 g
Madhuka	*Glycerrhiza glabra*	Stem and root	468.75 g
Utpala	*Nymphaea stellata*	Flower	468.75 g
Goghrita (Cow Ghee)		-	30 kg
Godugdha (Cow Milk)		-	30 litres

Table 2: Organoleptic characters of ingredients of Drakshadi Ghrita

Drug name	Colour	Odour	Taste
Draksha	Brown to black	Sweetish and pleasant	Sweet
Chandana	Yellowish brow	Persistently aromatic	Slightly bitter
Manjishtha	Brown to purple	Characteristic	Slightly astringent
Ashwagandha	Brownish white	Characteristic	Bitter and acrid
Vidari	Light cream	No specific odour	Sweet
Shatavari,	Cream	No specific odour	Sweetish
Pundrahva	Whitish yellow	Characteristic	Juicy and sweet
Madhuka	Yellowish cream	Faint and characteristic	Sweet
Utpala	Dark brown	No specific odour	Sweet

Table 3: Physicochemical parameters

Parameter studied	Result
Specific Gravity	0.919
Acid value	0.075
Refractive Index	1.464
Iodine value	32.81
Saponification Value	186.24

Pharmaceutical chemistry laboratory, IPGT and RA, Jamnagar.

Organoleptic Characters of finished product i.e. Drakshadi Ghrita

Drakshadi Ghrita was characterized as fine homogenous thick liquid which was sticky and slow falling as drop, orange yellow in colour, sweet smelling aromatic in odour, sweet, astringent in taste and immiscible in water.

Pharmacognosy of the Drakshadi Ghrita was not possible under microscope; hence individual raw drugs of Drakshadi Ghrita in powder form were analyzed separately.

RESULTS AND DISCUSSION

Pharmacognostical analysis

Organoleptic characters were noted down and are depicted in Table 2. Powder microscopy of herbal ingredients of Drakshadi Ghrita was studied and microphotographs were placed at respective figures.

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Microscopical Characters

Individual powder microscopy characters were as follows:
Draksha (*Vitis vinifera*): Acicular crystals. Oil globules, Rosette crystal, parenchyma with colouring matter. (Figure 1; a-d)

Chandana (*Santalum album)*: border pitted vessels, fibres through medullary rays, oil globules, starch grains. (Figure 2; a-d)

Manjishtha (*Rubia cordifolia*): Acicular crystals, cells with brown content. (Figure 3; a-c)

Ashwagandha (*Withania somnifera*): Border pitted vessels, fibres with simple starch grain, cork in surface view. (Figure 4; a-c)

Vidari (*Pueraria tuberosa*): Cork in surface view, fibres, starch. (Figure 5; a-c)

Shatavari (*Asparagus racemosus*): Acicular crystals, cork in surface view, pitted vessels, simple fibres. (Figure 6; a-d)

Pundrahva (*Saccharum officinarum*): Lignified fibres, pitted and anular vessels, simple starch with hilum. (Figure7; a-c)

Madhuka (*Glycerrhiza glabra*): Crystal fibres, pitted vessels, starch. (Figure 8; a-c)

Utpala (*Nymphaea stellata*): Oil globules, prismatic crystals and starch, group of fibres. (Figure 9; a-c)

Physico-chemical analysis

Drakshadi Ghrita was analyzed using various standard physico-chemical parameters such as acid value, saponification value, refractive index, iodine value, specific gravity. (Table 3)

DISCUSSION

Pharmacognostical study reveals authentification of individual raw drugs of Drakshadi Ghrita and is cross verified.[9][10][11][12][13][14][15][16][17] The pitted vessels, oil globules, rosette crystal, Acicular crystals, starch grains, prismatic crystals, fibres etc. were observed in ingredients. Quality control parameters like specific gravity, saponification value are standard for any fat or oil. Similarly, when oil-fats become rancid, triglycerides are converted into fatty acids and glycerol,[18] causing an increase in acid value, iodine value and refractive index suggestive of oxidation.[19] The oxidation levels of vegetable oils are important quality criteria in food chemistry because oxidation increases their toxicity by the formation of products such as hydroperoxides, aldehydes, ketones, etc.[20] All the physico-chemical parameters, acid value, saponification value, Refractive index, iodine value, specific gravity analyzed were almost near to the reference range as specified for cow's ghee (no previous research work is available as standard reference for Drakshadi Ghrita).[21] All the results show that the prepared Ghrita formulation is not rancid (after 7 months of preparation) and the quality of the Ghrita is standard.

CONCLUSION

Pharmacognostical study findings confirm the ingredients present in the Drakshadi Ghrita. It is inferred that the formulation meets maximum qualitative standards based on physicochemical parameters. The results of this study may be used as the reference standard in further research undertakings of its kind.

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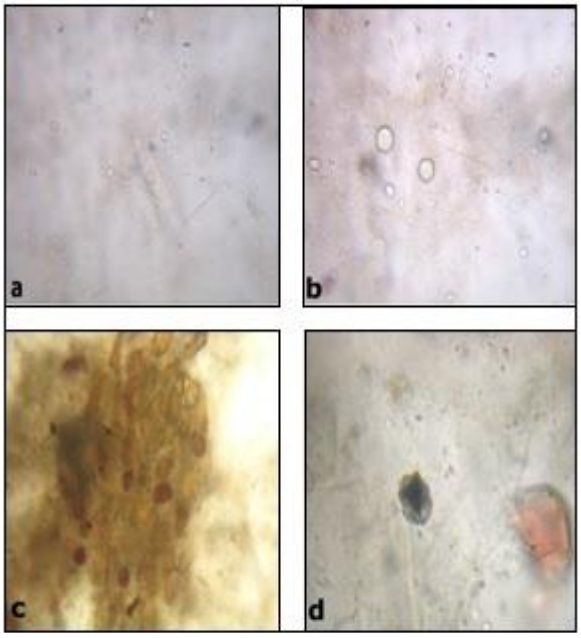
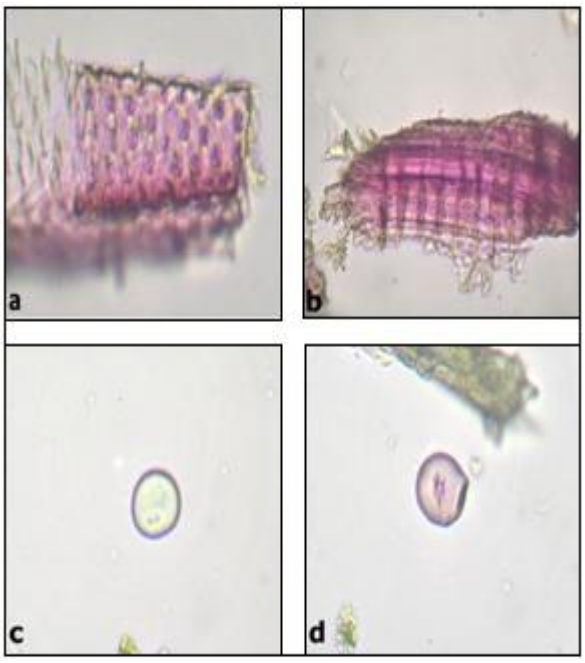
Figure 1: Powder microscopy of Draksha



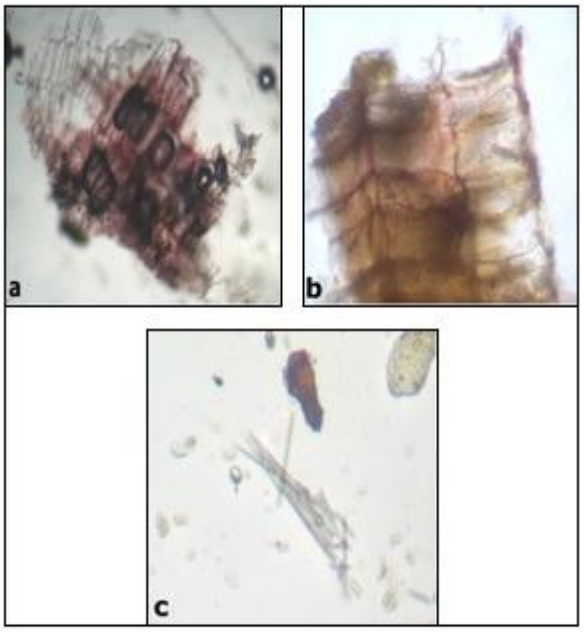
(a) Acicular crystals; (b) Oil globules; (c) parenchyma with colouring matter; (d) Rosette crystal

Figure 2: Powder microscopy of Chandana



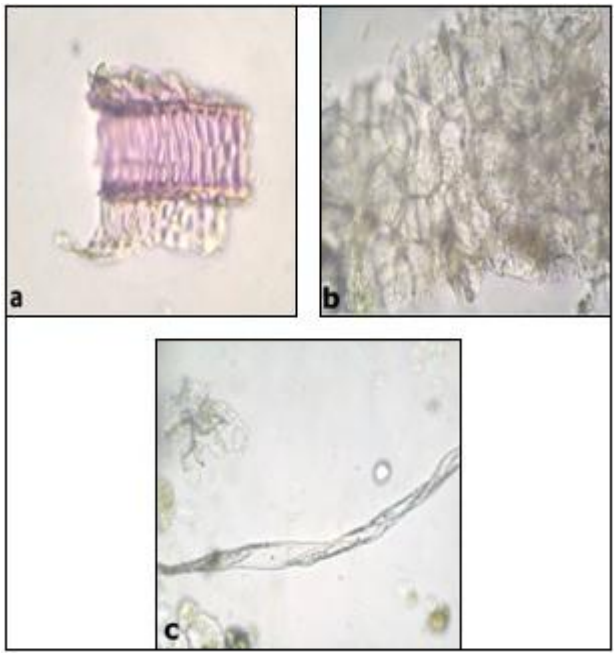
(a) border pitted vessels (b) fibres through medullary rays (c) oil globules (d)starch grains

Figure 3: Powder microscopy of Manjishtha



(a) cells with brown contents (b) cork in surface view (c) acicular crystals

Figure 4: Powder microscopy of Ashwagandha



(a) Border pitted vessels (b) cork in surface view (c) fibres with simple starch grain

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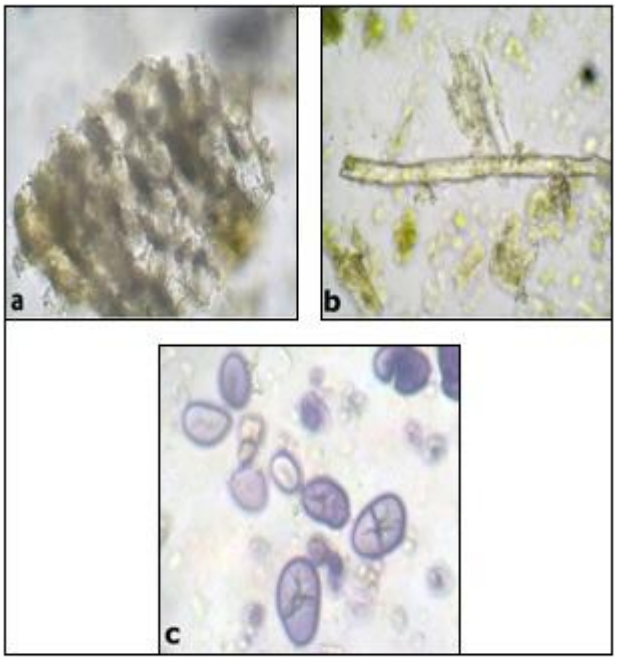
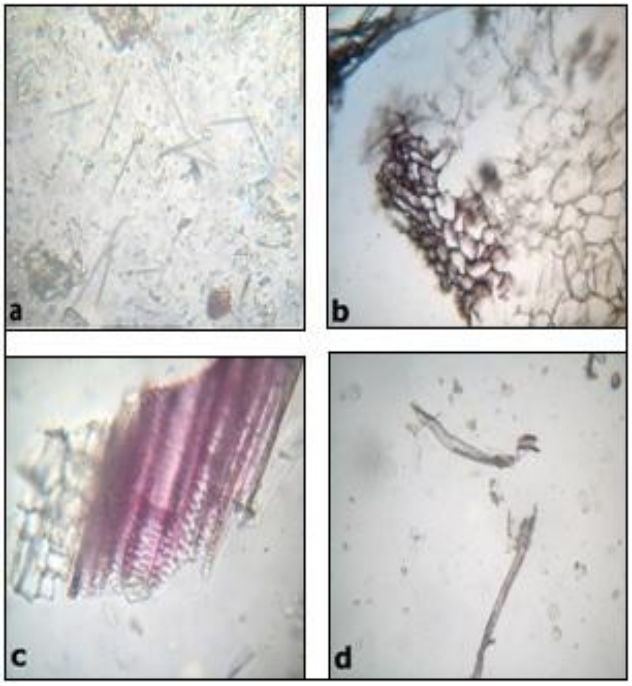
Figure 5: Powder microscopy of Vidari



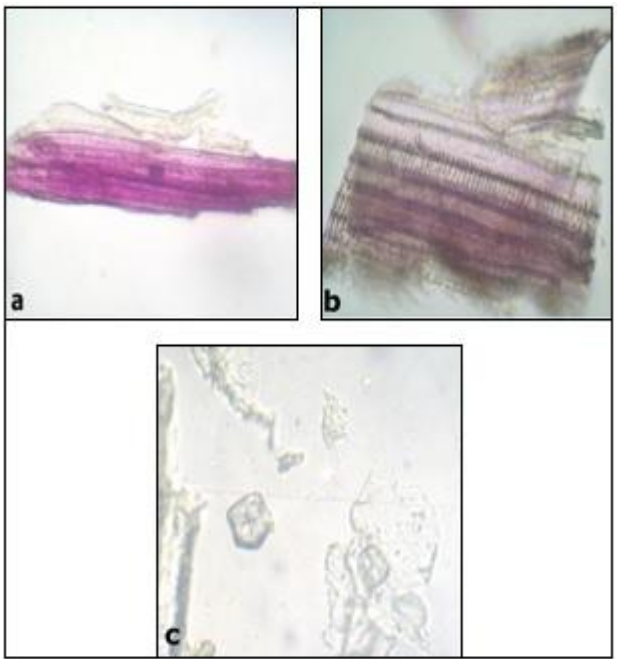
(a)cork in surface view (b) fibres (c) starch

Figure 6: Powder microscopy of Shatavari



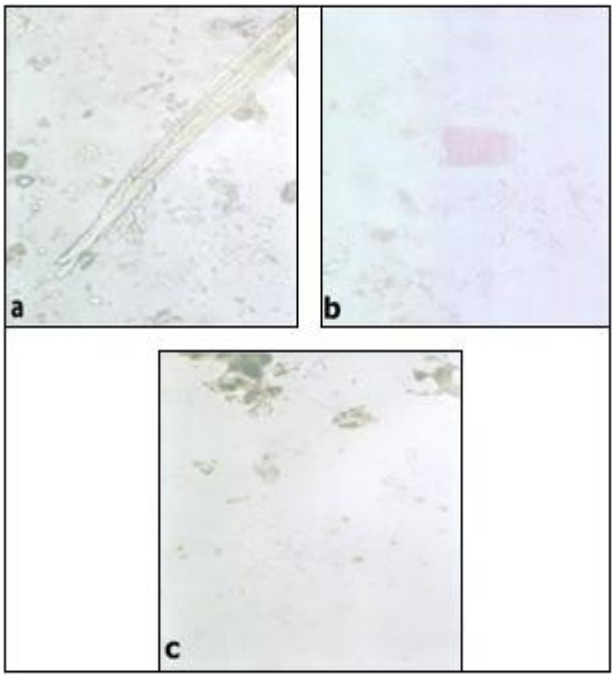
(a)Acicular crystals (b) cork in surface view (c) pitted vessels (d) simple fibres

Figure 7: Powder microscopy of Pundrahva



(a) Lignified fibres (b) pitted and annular vessels (c) simple starch with hilum

Figure 8: Powder microscopy of Madhuka



(a) Crystal fibres (b) pitted vessels (c) starch

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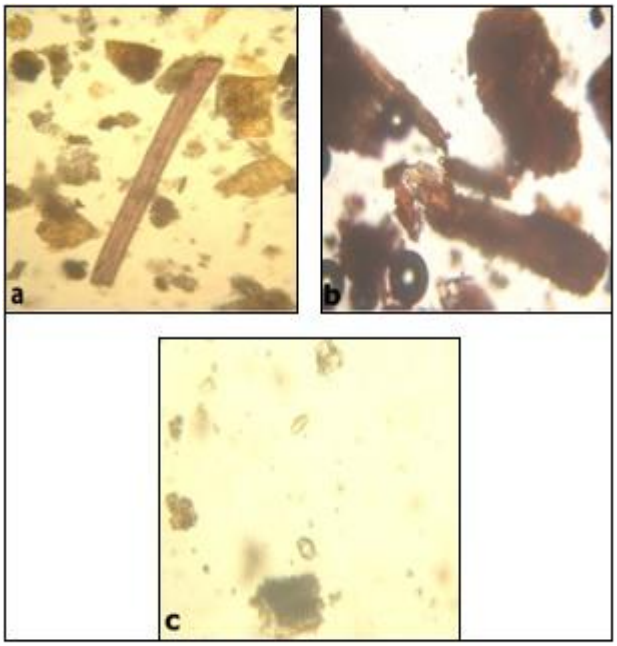
Figure 9: Powder microscopy of Utpala



(a) group of fibres (b) Oil globules (c) prismatic crystals and starch

REFERENCES

1. Vagbhata. Ashtanga Hridaya, Hari Sadasiva Sastri, Paradakara Bhisagacarya, editors. 5th ed. Varanasi: Chaukhamba Orientalia; 2007. Uttarasthana, 13/4-6. p. 944.
2. Vagbhata. Ashtanga Hridaya, Hari Sadasiva Sastri, Paradakara Bhisagacarya, editors. 5th ed. Varanasi: Chaukhamba Orientalia; 2007. Uttarasthana, 15/16-17. p.829.
3. Sushruta. Sushruta Samhita. Yadavaji Trikamji Acharya, editor. 7th ed. Varanasi: Chaukhamba Orientalia; 2002. Uttaratantra, 6/26. p.605.
4. Anonymous. The Indian Pharmacopoeia. Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. Vol. 1, p.19-20, 168-169. Vol. 2, p. 183-184. Vol. 3, p. 45-46, 208-209, 112-113, 222-223. Vol. 4. p. 122-123, 38-39.
5. Sharangadhara. Sharangadhara Samhita. Shailaja Shreevatsav, editor. 4th ed. Varanasi: Chaukhamba Orientalia; 2009. Madhyama Khanda, Snehakalpana Adhyaya, 9/6. p. 216.
6. Wallis TE. Text Book of Pharmacognosy. 5th ed. New Delhi: CBS Publishers; 1985. p. 571-578.
7. Khandelwal KR. Practical Pharmacognosy. 19th ed. Pune: Nirali Prakashan; 2008. p. 149-66.
8. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy. 42nd ed. Pune: Nirali Prakashan; 2008. Ch. 6.1, A1.
9. Anonymous. The Indian Pharmacopoeia. Vol. 3, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 45-46.
10. Anonymous. The Indian Pharmacopoeia. Vol. 3, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 208-209.
11. Anonymous. The Indian Pharmacopoeia. Vol. 3, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 112-113.
12. Anonymous. The Indian Pharmacopoeia. Vol. 1, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 19-20.
13. Anonymous. The Indian Pharmacopoeia. Vol. 2, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 183-184.
14. Anonymous. The Indian Pharmacopoeia. Vol. 4, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 122-123.
15. Anonymous. The Indian Pharmacopoeia. Vol. 4, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 38-39.
16. Anonymous. The Indian Pharmacopoeia. Vol. 1, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 168-169.
17. Anonymous. The Indian Pharmacopoeia. Vol. 3, Part 1. 4th ed. New Delhi: Govt. of India publication; 1996. p. 222-223.
18. Retrieved from: http://en.wikipedia.org/wiki/Acid_value [Accessed on: 12/2/2014]
19. Fekarurhobo GK, Obomanu FG. Effects of Short Term Exposure to Sunlight on the Quality of Some Edible Vegetable Oils. Research Journal of Applied Sciences, 2009;4(5):152-156.
20. Arya SS, Ramanujam S, Vijayaraghavan PK. Refractive index as an objective method for evaluation of rancidity in edible oils and fats. Journal of the American Oil Chemists Society, 1969; 46(1):28-30.
21. Dhurvey YR, Kawtikwar PS, Sakarkar DM. Evaluation of Physicochemical Properties of Cow Ghee before and after Hydrogenation. International Journal of Chem. Tech. Research, 2012;4(1):185-189.

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