Research Article

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PREPARATION AND PHYTOCHEMICAL EVALUATION OF NAVAKARSHIKA KASHAYA AND IT'S GHANA

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Received on: 14/03/14 Revised on: 23/04/14 Accepted on: 14/05/14

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DOI: 10.7897/2277-4343.05367

ABSTRACT

Medicinal herbs are the local heritage with global importance. They have curative properties due to presence of various complex chemical substances of different composition, which are found as plant secondary metabolites in one or more parts of these plants. Navakarshika Kashaya is one of such poly herbal preparation which is mainly indicated in Kushta, Vatarakta, Kapala kushta, Pama, Raktamandala etc. skin diseases. In spite of so many indications it is difficult to administer it in daily practice due to its astringent and bitter taste along with short shelf life. So here an attempt was made to prepare the Ghana from Kashaya without altering its therapeutic properties for the convenience of patients. The objective of this study was to prepare and carry out the phytochemical evaluation of Navakarshika Kashaya and its Ghana. Collection of the raw drugs, preparation of Kashaya and Ghana were done from GMP certified Pharmacy and subjected to TLC, physicochemical and phytochemical analysis from AYUSH approved Central Research Facility. Phytochemical constituents that are proteins, reducing sugars, mono saccharides, pentose sugars, glycosides, cardiac glycosides, saponin, flavonoids, and steroids were found in both forms. Kashaya showed three different R_f values in day light but it was absent in Ghana. In Short and long wavelengths both forms have same numbers but different R_f values. Ghana can be taken as alternative form of kashaya which is having a better shelf life, easy for packaging and convenient for dosing.

Keywords: Navakarshika Kashaya, Ghana, Skin diseases.

INTRODUCTION

Drug is a substance or product that is intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient¹. In Ayurveda, an ideal medicine is one which should be in less dosage form, possessing maximum therapeutic effects along with blending palatability². Thus the greatest emphasis is given to the complete knowledge of drugs including identification, procurement, processing, preparation and application under a specialized branch of learning called 'Bhaisajya Kalpana'³. Kashaya (Decoction) preparations are the basic formulations which are effective in many conditions but the main drawback is dose (Pala- 48 ml/day), nonpalatability⁴, tedious preparation methods⁵, cost effectiveness and shelf life of 1 yama (3 hours). Thus many techniques are adopted in today's era where these decoctions are successfully converted into Ghana (Solid) form which is easy for packing, with same therapeutic effects, cost effectiveness, palatability and increased shelf life up to 1 year.⁶ Navakarshika Kashaya⁷ is a unique preparation explained under Vatarakta chikitsa which is also indicated in Kushta, Kapala kushta, Pama, Raktamandala (skin disorders) along with suitable adjuvant and dosage. Due to its non-palatability and bitter taste most of the times this medicine is least prescribed. Hence in this study Navakarshika kashaya is converted into Navakarshika Ghana and Physicochemical and Phytochemical properties of both forms are evaluated to establish the standards for the same.

MATERIAL AND METHODS

The raw drugs were collected from GMP certified KLEU's Ayurveda Pharmacy, Khasbag, Belgaum, India and were authenticated in AYUSH approved Central Research Facility, KLEU's Shri B.M.K Ayurveda Mahavidyalaya, Belgaum, India.

Navakarshika Kashaya

Ingredients

Navakarshika Kashaya⁷ mainly contains nine drugs; they are Amalaki (*Emblica officinalis* Linn; CRF/12/580), Bibhitaki (*Terminalia bellirica* Roxb; CRF/12/581), Haritaki (*Terminalia chebula* Retz; CRF/12/582), Nimba (*Azadirachta indica* A. Juss.; CRF/12/583), Manjishta (*Rubia cordifolia* Linn; CRF/12/584), Vacha (*Acorus calamus* Linn; CRF/12/585), Katurhini (*Picrorhiza kurroa* Royle ex Benth; CRF/12/586), Guduchi (*Tinospora cordifolia* Willd. Miers; CRF/12/587), Daruharidra (*Berberis aristata* D C; CRF/12/588) taken in equal quantity.

Method of Preparation of Kashaya

Kashaya (Decoction) was prepared using 1 part of Navakarshika kashaya (course powder) bharad (18 kg) and 16 parts of water (288 liters) was added and boiled on medium flame (95-105°C) till it gets reduced to 1/4th part (72 liters) as per the classical reference (Figure-4). Then Kashaya (Decoction) was filtered and stored in a clean vessel.

Preparation of Ghana

Navakarshika kashaya (71.5 liter) was heated on medium flame till water portion was evaporated. The residue was scraped well, collected and kept in drier at the temperature of 40°C for 2 hours every day for 15 days for complete drying. Later this was powdered (2 kg) into finest form (Figure-5). Obtained Ghana⁸ was filled in capsules (500 mg/cap) and preserved in a sterile container.

Analytical study

Kashaya and its Ghana were subjected for organoleptic, TLC, physicochemical, phytochemical analysis as per the standards of Ayurvedic pharmacopeia of India⁹ in AYUSH approved Central Research Faculty, KLEU's Shri B.M.K Ayurveda Mahavidyalaya, Belgaum, India.

RESULTS

Organoleptical Characters

Kashaya was having brownish color with a heavy bitter taste and characteristic odor of the ingredients like Manjishta, Katuki, Vacha and Daruharidra. Ghana had

faint characteristic odor of drugs, slightly sticky consistency, brownish black color, slight bitter taste which was comparatively milder than Kashaya.

Physico-chemical properties

Kashaya showed Specific Gravity-0.982, Total Solids-5.956 %, Weight of total solids in ml - 0.894 and pH - 3.53. Ghana showed Total Ash value - 7.5 %, Acid Insoluble Ash value - 4.5 %, Alcohol soluble extractive - 37.6 % and Water soluble extractive - 91.2 %.

Preliminary Phytochemical Parameters

Kashaya and Ghana samples were subjected for phytochemical screening which are tabulated in the Table 1.

Thin Layer chromatography

TLC studies of both forms were carried out using same solvent system of ethyl acetate: methanol: water (100:16.5:1.35) and the results are given in Table 2. (Figure 1, 2 & 3)

Table 1: Organic and Inorganic Constituents of Navakarshikakashaya and Ghana

S. No	Organic Constituents	Navakarshika Kashaya	Navakarshika Kashaya Ghana
		Aqueous Extract (1 %)	Aqueous Extract (1 %)
01	Carbohydrates	-ve	-ve
02	Proteins	+ve	+ve
03	Reducing sugars	+ve	+ve
04	Mono saccharides	+ve	+ve
05	Pentose sugars	+ve	+ve
06	Fats and oils	-ve	-ve
07	Non reducing Polysaccharide (starch)	-ve	-ve
08	Cardiac glycosides:	+ve	+ve
	Saponin glycosides:	+ve	+ve
09	Alkaloids	-ve	-ve
10	Saponins	+ve	+ve
11	Flavonoids	+ve	+ve
12	Steroids	+ve	+ve

Table 2: Thin Layer chromatography of Navakarshika kashaya and its Ghana (Ethyl Acetate: Methanol: Water = 100: 16.5: 1.35)

S. No	Formulation	Extracts	Day light	Short wavelengths	Long wavelengths
1.	Navakarshika Kashaya	Aqueous Extract 1 %	0.46nm 0.63nm 0.14nm	0.94 nm 0.85 nm 0.63 nm	0.84 nm 0.61 nm 0.46 nm 0.22 nm
2.	Navakarshika Ghana	Aqueous Extract 1 %	Nil	0.62 nm 0.51 nm 0.1 nm	0.73 nm 0.65 nm 0.58 nm 0.1 nm

DISCUSSION

Navakarshika Kashaya is polyherbal preparation with drugs having bitter and astringent properties because of which patient complaints nausea and vomiting soon after its consumption. So conversion of Kashaya into such a form is necessary which will not only help to reduce its dose but also increase its palatability and has a better shelf life. It also become convenient for packaging. Hence Kashaya was converted into Ghana form. Organoleptical characters, phytochemical, physicochemical and TLC were evaluated as a primitive step to analyze the Navakarshika kashaya and its Ghana. Organoleptic characters of the Kashaya and Ghana showed bitterness

with a characteristic odor having brownish black color this was may be due to the combination of Guduchi, Katuki, Nimba, Daruharidra, and Triphala. Ghana was slightly sticky in nature which may be due to the gum and resinous matter of Daruharidra and Nimba. The advantage of Ghana is that it can be easily filled into capsules thus masking the bitter taste and odor of kashaya. Phytochemical characters such as proteins, reducing sugars, monosaccharide's, pentose sugars, glycosides, cardiac glycosides, saponin, flavonoids and steroids were found both in Kashaya as well as Ghana. Hence Ghana can be taken as alternative form for Kashaya.

Figure 1: TLC of Navakarshika Kashaya and its Ghana in Day light

Figure 2: TLC of Navakarshika Kashaya and its Ghana in short wavelength

Figure 3: TLC of Navakarshika kashaya and its Ghana in Long wavelength

Figure 4: Preparation of Kashaya

Figure 5: Prepared Kashaya Ghana

Thin Layer Chromatography of Kashaya showed three different R_f values in day light but it was absent in Ghana because all the three constituents might not be thermolabile and lost during drying process. In Short and long wavelengths both forms have same numbers but different R_f values. The difference in R_f values may be due to change of structures or new bond formation or bond breakage of components due to loss of water and prolonged exposure to heat and also may be due to limitation of solvent which might have not shown all other constituents in the TLC plate.

CONCLUSION

In the present study, assessment of physicochemical, phytochemical parameters of Navakarshika kashaya and Navakarshika Ghana didn't show much change. Hence Ghana can be taken as an alternative effective substitute for the Navakarshika kashaya.

ACKNOWLEDGEMENT

Authors are grateful and thankful to Dr. B.S Prasad MD Ayu. PhD; Dr. Sameer N Naik MD Ayu. PhD; Dr. R.R. Hiremath, MD Ayu. PhD, Dr. Giridhar Vedantam, MD Ayu, KLE Ayurveda Pharmacy for allowing preparation and Central Research unit for permitting the analysis.

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Cite this article as:

Y. Raghavendra, Hiremath V. Kashavva. Preparation and phytochemical evaluation of Navakarshika kashaya and its Ghana. *Int. J. Res. Ayurveda Pharm.* 2014;5(3):326-329 <http://dx.doi.org/10.7897/2277-4343.05367>

Source of support: Nil, Conflict of interest: None Declared