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ANALYTICAL STUDY OF *KANDUGHNA MAHAKASHAYA*; AN AYURVEDIC ANTIALLERGIC FORMULATION

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ABSTRACT

Kandughna Mahakashaya is a group of herbal drugs mentioned in *Ayurvedic* text named *Charaka Samhita*. The formulation is effective in allergic disorders, and problems related to digestive system and also have analgesic and immune modulator property. Keeping all these points in mind the present study is undertaken with the aim to modify it into syrup form. **Material and Method**: The prepared formulation was evaluated for Physiochemical and organoleptic analysis and the formulation also subjected for TLC profile and microbial analysis. **Result:** The result shows organoleptic and physiochemical analysis with TLC profile and microbial analysis. **Conclusion:** This paper presents the analytical study of the formulation and showed that the medicine can be easily prepared and have similar analytical values which are comparable with limits of values as per API standards.

KEYWORDS: *Kandughna Mahakashaya,* organoleptic and physiochemical analysis, TLC profile.

INTRODUCTION

Kandughna Mahakasaya[1] is an oral medication in the syrup form, which contains ten herbal drugs having the properties like *Kandughna*[2] (anti allergic), *Vedanasthapaka*[3] (analgesic), *Rasayana*[4] (immune modulator) and *Deepana-Paachana*[5] (digestive property) etc. Allergic

disorders from *Ayurvedic* perspective are caused due to the *Ama (toxins)* present in the body and due to low immunity. To permanently resolve this, strengthening of the immune system and proper digestion is an effective way of treating Allergies. Hence the drug is effective in allergic disorders. This paper presents the analytical study of the formulation, which may serve as supporting literature for future studies and to maintain standard quality of the formulation.

MATERIALS AND METHODS

Aims and objectives

1. To analyze the physio-chemical analysis and organoleptic character of drug.
2. To find out the TLC profile of *Kandughna Mahakashaya* formulation prepared by classical and modified methods.

Collection of raw materials

The raw drugs for the study were procured from the Hansa Pharmacy Premnagar Ashram, Haridwar Uttarakhand. The final product i.e *Kandughna Mahakashaya* was prepared in the Hansa Pharmacy Premnagar Ashram, Haridwar Uttarakhand.

Method of preparation of *Kandughana Mahakashaya*

Each ingredient of the *Kandughana Mahakashaya* was taken in quantity of 150gms in coarse powder (1500gm) and eight parts of potable water (12lt) was added; boiled on low to medium heat in stainless steel vessel, on a LPG stove till the liquid portion was reduced to 1/4th of the total quantity followed by filtration.[6] Total 3.16Lt decoction was obtained.

The total quantity of decoction taken was 3.1Lt and the quantity of sugar added was 2kg (66%). After complete dissolving the sugar it was filtered and was reheated until getting one thread consistency and stored in a air tight container. The total amount of syrup *Kandughna Mahakashaya* obtained was 4.8Lt.

The contents of *Kandughna Mahakashaya* and there proportion is mentioned in Table 1.

Drug	***Latin name***	**Family**	***Part Use***	**Ratio**
Chandan (shwet)	*Santalum album*	*Santalaceae*	Kandsar/oil	150gm
Nalad (Jatamanshi)	*Nordostachys jatamansi*	*Valerianaceae*	Root	150gm
Kritmal (Amaltas)	*Cassia fistula*	*Leguminosae*	Root/Falmajja, Flower, leaf	150gm
Naktamal (Latakaranj)	*Caesalpinia crista*	*Leguminosae*	seed	150gm
Nimba	*Azadirachta indica*	*Meliaceae*	flower,leaves,twak,seed,oil	150gm
Kutaj	*Holarrhena antidysenterica*	*Apocynaceae*	Root	150gm
Sarshap	*Brassica campestris*	*Crucuferae*	seed	150gm
Madhuk	*Glycyrrhiza glabra*	*Leguminosae*	Root	150gm
Daruharidra	*Berberis aristata*	*Berberidaceae*	Root,Stem,Fruit	150gm
Musta (Nagarmotha)	*Cyperus rotundus*	*Cyperaceae*	Kand	150gm

Analytical study

Prepared final product i.e. *Kandughna Mahakashaya* was analyzed by employing various analytical parameters.

Oraganoleptic Characterization

Oraganoleptic characteristics for various sensory characters like appearance, color, taste, odor etc and was carefully noted down. Table 2.

Table 2.

Oraganoleptic characterization description:	
Appearance	Liquid
Colour	Brown
Odour	Characteristic
Taste	Characteristic

Physical Analysis

Results of physical analysis such as Specific gravity and refractive index are detailed in Table no. 3. All are in normal range and done by the method mentioned under A.P.I, Part-II, Vol.I, Appendices- 2.2.7. 2.2.8.

Specific Gravity

Specific gravity of a liquid is the weight of a given volume of the liquid at room temperature compared with the weight of an equal volume of water at the same temperature, all weighing being taken in air. The specific gravity of the sample was determined with the help of a specific gravity bottle at room temperature. The specific gravity of this formulation is mentioned in Table.3.

Refractive index

Refractive index of a substance with reference to air is the ratio of the sine of angle of incidence to the sine of the angle refraction of a beam of light passing from into the substance. It can also define as the ratio of velocity of light into vacuum to its velocity in the substance. Like specific gravity, melting point, boiling point etc. the refracting index is also another important physical consistent that can be use for analysis. Refractive index of substance varies with temperature. Hence temperature is to be note while determining refractive index. The refractive index of the sample was determined at room temperature by using Abbe's refractometer. The Refractive index of this formulation is mentioned in Table.3.

Table 3.

Refractive index	1.34
Specific gravity	0.895g/ml

pH value

pH was determined by using Digital pH meter. The measurement of pH was 5.4 which is weakly acidic.

Kandughna Mahakashaya was further subjected to Thin Layer Chromatography (TLC) study.

TLC Profile

Instrument used was silica plate. The stationary phase used was silica gel G60F254 and mobile phase was Tolune, ethyle acetate, formic acid (6:3:1). The plate was visualized under iodine vapours, Rf value were recorded 0.24,0.47,0.59,0.87.

Aflatoxins

Afltoxin B1, B2, G1, G2 were tested by the method mentioned under A.P.I, Part II, Vol-I, Appendices- 2.7 which shows no detection of any aflatoxins.

Table 4.

Parameters	**Specification**	**Result**
Aflatoxins B1	**0.5 PPM**	Not detected
Aflatoxins G1	**0.5 PPM**	Not detected
Aflatoxins B2	**0.1 PPM**	Not detected
Aflatoxins G2	**0.1 PPM**	Not detected

Microbial Analysis

Kandughna Mahakashaya was evaluated for total aerobic microbial count and total yeast and mould count. Total aerobic microbial count was carried out by plate count method, which is mentioned in A.P.I, Part II, Vol-I, Appendices- 2.4.

Table 5.

Microbial limit test		
Parameters	**Specification**	**Result**
Total Aerobic Microbial count	**10^5/gm**	**10^4/gm**
Total yeast and mould count	**10^3/gm**	**10^2/gm**

Chemical Analysis

Results of chemical analysis such as Total ash, Acid soluble ash, Water soluble extract, Alcohol soluble extract are detailed in Table. 6, all are in normal range and done by the method mentioned under A.P.I, Part-II, Vol. I, Appendices- 2.2.3. 2.2.4.

Table 6.

Parameter	***Kandughna Mahakashaya***
Total ash	2.75%
Acid soluble ash	0.87%
Water soluble extract	69.24%
Alcohol soluble extract	29.47%

RESULTS AND DISCUSSION

Kandughna Mahakashaya is mentioned in *Charaka Samhita* as a group of anti-allergic herbal drugs. Modification into syrup was attempted with the aim of enhancing palatability.

The pH of any liquid provides the quantitative indication of acidity or alkality of a solution. The pH of syrup was 5.4, indicating the slightly acidic nature of sample. Absorption, efficacy and irritability depend on ph value.

Refractive index of the syrup was 1.34, which was slightly increased. Increase in the refractive index in the syrup is due to addition of sugar particles, which increases the density of syrup.

The microbial test limit was under normal limits. It shows that the medicine was prepared in aseptic condition and stored in sterilized bottle.

Thin Layer Chromatography study (TLC) revealed presence of phytoconstituents with different Rf values, which showed diagnostic bands under 254 and 366 nm UV to establish finger printing profile. It showed Rf values 0.24, 0.47, 0.59 and 0.87 were recorded, which may be responsible for expression of its pharmacological and clinical actions. It is an effective technique of screening herbal raw drug for authenticity and quality.

Figure 1: TLC Result.

Figure 2: Syrup *Kandughna Mahakashaya.*

Rf; 0.24, 0.47, 0.59, 0.87.

CONCLUSION

This study on pharmaceutico analytical evaluation could conclude as follows: Raw materials of study formulations are easily available. All the drugs of *Kandughna Mahakashaya* are individually having anti allergic properties. The drugs in the study predominantly have *Katu, Tikta, Kashaya Rasa* and *Skeeta Veerya,* which helps as anti allergic effect. There is no pharmaceutical constraint in preparation of syrup. Analytical study including TLC has helped to generate preliminary standard for the formulation and this study may be useful in future for other scholars.

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