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Pharmacognostical Characterization of an Ayurvedic Powdered Formulation: Vidangathanduladi Choorna

Jenat Jaxon[1], Ayana Elma Shaji[2], Meera Mohan K[2], Bijeshmon PP[2]

1. Dept. of Botany, ST. Joseph's College, Irinjalakuda, Thrissur.
2. Quality Control Division, Sitaram Ayurveda Pvt. Ltd., PO Nedupuzha, Thrissur.

Corresponding Author: Bijeshmon PP, Manager, Quality Control Division, Sitaram Ayurveda Pvt. Ltd. Email:bijeshplanthadam@gmail.com, Mob:+91 9447765202.

ABSTRACT

Quality standardization of various Ayurvedic formulations used in indigenous systems of medicines is becoming more necessity. Vidangathanduladi Choorna is a classical Ayurvedic formulation containing fine powders of *Embelia ribes (Fruit), Emblica officinalis (Fruit rind), Terminalia bellirica (Fruit rind), Terminalia chebula (Fruit rind), Piper longum (Fruit), Operculina turpethum (Root) and Yavakshara (Hordeum vulgare plant ash)* and it is useful in treatment of Gulma (Belching) Haleemakam (Jaundice), Aruchi (Tastelessness). It is useful in preventing the onset or controlling the progression of Sthoulya (Obesity), Medovriddhi (Excess Fat) Prameha / Madhumeha (Urinary Disorders / Diabetes Mellitus) and other metabolic disorders. The present study is carried out for physical parameters viz, Total ash, Acid insoluble ash, Water extractive values, Alcohol soluble extractive values, Powder microscopic and TLC analysis. These parameters will help for the standardization of Vidangathanduladi Choorna– a classical Ayurvedic powdered formulation.

Key words: Vidangathanduladi Choorna, TLC, Powder microscopy, Standardization

1. INTRODUCTION

Choorna is defined as a fine powder of drug or drugs in Ayurvedic system of medicine. Choorna formulations are similar to powder formulations in Allopathic system of medicine[1]. In recent days, choorna is formulated into tablets in order to facilitate the dose easily. These forms of medicament are prescribed generally to improve the drug absorption due to the smaller particle size. Pharmacognosy is a simple and reliable tool, by which complete information of the crude drug can be obtained[2]. Today with the present surge of interest in the phytotherapeutics, the availability of genuine plant material is becoming scarce. Accurate determination of drug identity forms an essential part of its study[3]. Most of the traditional systems of medicines are effective but the need is just to validate them to assess the

quality, quantity and purity of the drugs. Hence, standardization of Ayurvedic drug is an important factor and the basic need of Ayurvedic drug industry today.

Vidangathanduladi Choorna is a classical Ayurvedic powdered formulation prescribed for the treatment of Gulma (Belching), Haleemakam (Jaundice), Aruchi (Tastelessness). It is also useful in preventing the onset or controlling the progression of Sthoulya (Obesity), Medovriddhi (Excess Fat) Prameha / Madhumeha (Urinary Disorders / Diabetes Mellitus) and other metabolic disorders[4]. The preparation of Choorna is based on the traditional methods in accordance with the procedures given in Ayurvedic classical texts.

Testing parameters are more challenging for the standardization of Ayurvedic drugs and other traditional system of medicine. Standardization of these products will enhance the acceptancy in the global market. The present study is an attempt made in developing standardization parameters covering pharmacopeial characterization, viz., physiochemical values, powder microscopy, TLC fingerprint profile etc. for Vidangathanduladi Choorna.

2. MATERIALS AND METHODS

2.1. Plant material

The plant materials for Vidangathanduladi Choorna are collected from Raw Material store of Sitaram Ayurveda(P) Ltd., Thrissur, Kerala. The ingredients are Vidanga- *Embelia ribes* (Fruit), Amla -*Emblica officinalis* (Fruit rind), Vibhitaki- *Terminalia bellirica* (Fruit rind), Haritaki -*Terminalia chebula* (Fruit rind), Pippali - *Piper longum* (Fruit), Trivrut - *Operculina turpethum* (Root) and Yavakshara - *Hordeum vulgare* (Plant ash) (Fig -1). All ingredients are authenticated by Botanists, Sitaram Ayurveda, Thrissur and the control samples were kept in QC Department of Sitaram Ayurveda, Thrissur, Kerala. All the ingredients are used of Pharmacopeial quality and are washed, dried and ground individually except Yavakshara, passed through 100 mesh. Each ingredient is weighed separately and mixed to get a homogeneous mixture. The mixture is dried in an oven at temperature not exceeding 60^0C till the moisture content below 5%. The choorna was packed in air tight containers to protect from light and moisture[5].

2.2. Physicochemical parameters

Physicochemical analysis of sample was carried out[6]. Quantitative analysis of Total ash, Acid insoluble ash, Water soluble ash, Extractive values in water and alcohol soluble extractives, Loss on drying at 105^0 C were checked according to the standard methods in Ayurvedic Pharmacopeia of India (API)[7].

2.3. Powder microscopy

Powder microscopic studies were done by standard procedures[8].Slides were prepared with chloral hydrate, glycerin, phloroglucinol and iodine-in-potassium iodide solution, the characters were observed under Magnus Trinocular Microscope and the images were captured with Sony Digital camera.

2.4. Thin Layer Chromatography (TLC) studies

20 g Choorna samples were refluxed with 100 ml methanol for 1 hour; filtered and evaporated completely by water bath and the residue was dissolved in 1 ml methanol. Similarly, methanol extract was prepared for all 6 ingredients, Vidanga- *Embelia ribes* (Fruit), Pippali - *Piper longum* (Fruit), *Terminalia chebula* (Fruit rind), Amla -*Emblica officinalis* (Fruit rind), Vibhitaki- *Terminalia bellirica* (Fruit rind), Trivrut - *Operculina turpethum* (Root). Extracts of choorna and all ingredients TLC was carried out with a slurry of the adsorbent silica gel G is coated uniformly on clean glass plates (10 x 10 cm) using commercial spreader. Glass capillaries were used to spot the sample on the TLC plate on the marked bottom line. Then it was placed in the fume hood to dry the plate and loaded the sample again until a dark spot is obtained. The plate was developed to a distance of 80 mm with Toluene: Ethyl acetate: (9:1) as mobile phase in a glass chamber (20cm x 10cm) previously saturated with mobile phase vapor. The plates after running were removed from the chamber, completely dried in air at room temperature visualized by kept in photo documentation chamber and captured images under UV 366 nm.

3. RESULTS AND DISCUSSION

3.1. Physicochemical Parameters

Table-1: Physio chemical parameters of Vidangathanduladi Choorna.

No.	Parameters	Sample
1	Foreign matter	Nil
2	Total ash	16.12 %
3	Acid insoluble ash	1.85 %
4	Alcohol soluble extractives	26.61 %
5	Water soluble extractives	28.28 %
6	Loss on drying at 105^0C	3.54 %
7	pH	3.95

3.2. Powder Microscopy

The sample of Vidangathanduladi Choorna was found to be brown coloured moderately fine powder with a pleasant smell. Examining the sample of choorna for foreign matter by spreading the sample on a petri dish, did not show any filth, fungus or any other matter in day light. All the particles of choorna were passed through 100 mesh. The Vidangathanduladi Choorna compound formulation powder is characterized by the presence of prismatic crystals of calcium oxalate, trichomes, thick walled stone cells, fragments of xylem vessels etc.(Fig-2). Physicochemical, data were tabulated (Table 1).

3.3. Thin Layer Chromatography (TLC)

The TLC plates were observed under ultra violet at 356 (Fig: 3). T1, T2, T3, T4, T5, T6 are the methanolic extracts of *Embelia ribes, Piper longum, Terminalia chebula, Emblica officinalis, Terminalia bellirica, and Operculina turpethum* respectively and T7 is the metahnolic extract of Vidangathanduladi Choorna.

Fig-1: Photographs of raw materials used in Vidangathanduladi Choorna.

Embelia ribes

Emblica Officinalis

Terminalia bellirica

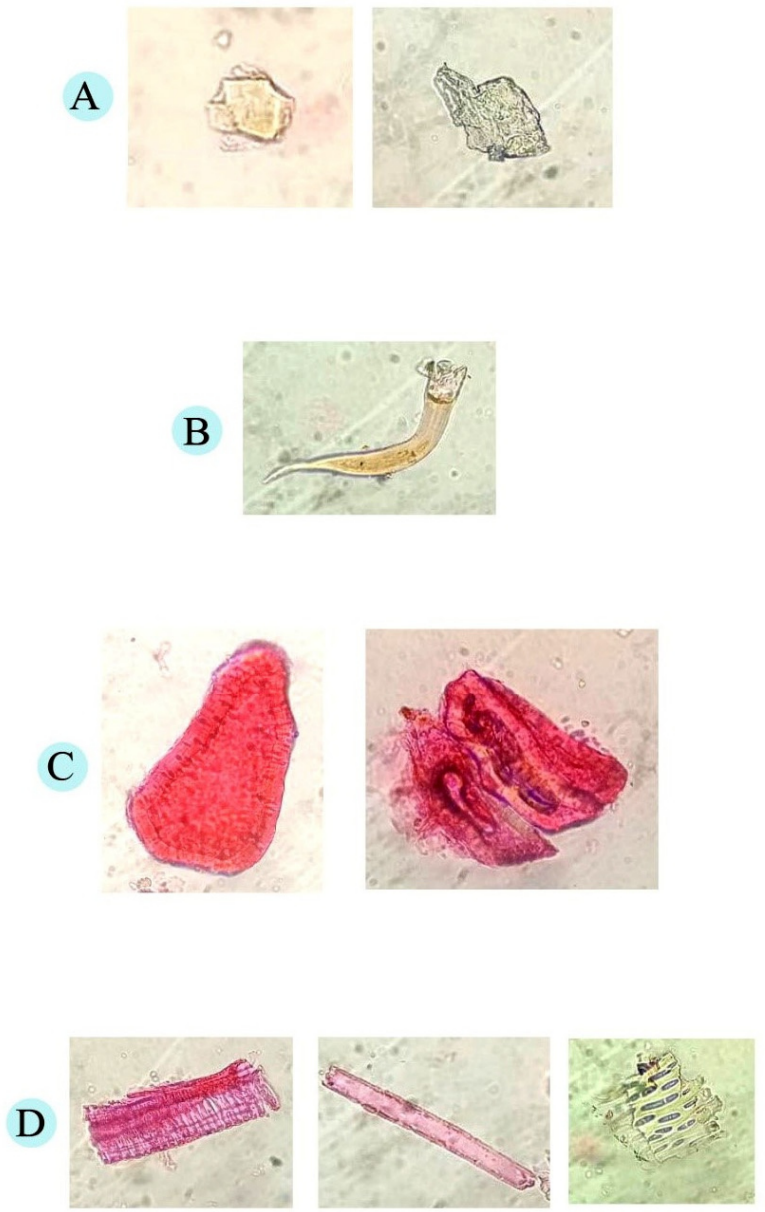
Terminalia chebula

Operculina turpethum

Piper longum

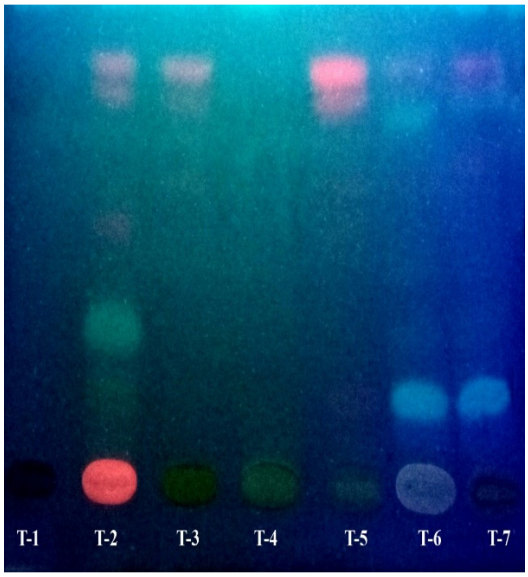
Hordeum vulgare

Fig -2: Powder microscopy of Vidangathanduladi Choorna



A- Prismatic crystals of calcium oxalate, B- Trichomes, C- Thick walled stone cells
D- Fragments of Xylem Vessels

Fig -3: TLC profile of Vidangathanduladi Choorna with ingredients under 366 nm



T1-Embelia ribes, T2-Piper longum, T3-Terminalia chebula, T4-Emblica officinalis, T5-Terminalia bellirica, T6-Operculina turpethum, T7- Vidangathanduladi Choorna.

Table :2- Rf Values of Vidangathanduladi Choorna with Ingredients

No.	Name of Ingredient	Number of Spots	Rf Values
1	*Embelia ribes*	1	0.25
2	*Piper longum*	4	0.26,0.36,0.50,0.79
3	*Terminalia chebula*	3	0.60,0.74,0.79
4	*Emblica officinalis*	1	0.79
5	*Terminalia bellirica*	3	0.60,0.74,0.79
6	*Operculina turpethum*	4	0.26,0.38,0.73,0.79
7	Vidangathanduladi Choornam	4	0.26,0.38,0.74,.079

4. CONCLUSION

The physical parameters evaluated confirm the standard of the formulated choorna. The present study focused on the complete pharmacognostic, powder microscopic, TLC analysis; and this can be considered for the pharmacognostic evaluation of Vidangathanduladi Choorna. With the growing demand of herbal drugs, it is suggested that this standardization tool will help in maintaining the quality and batch to batch consistency of many important Ayurvedic preparations including Vidangathanduladi Choorna.

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