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Standardization of polyherbal formulations: containing *Cassia angustifolia*

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Abstract

Most of the traditional systems of medicine are effective but they lack of standardization. So there is need to develop standardization technique. Central council for research in Ayurveda has given preliminary guidelines for standardizing these conventionally used formulations. For the uniformity of batches in production of herbal formulations it is necessary to develop method for evaluation. In this paper attempt has been made to evaluate Divya churna, a polyherbal formulation consisting of 7 ingredients with specific morphological parts. Sample was collected from market and was subjected to physicochemical evaluation. Microscopic characterization was compared with authentic ingredients as a reference. It was observed that commercial sample from market matched exactly with that of authentic standards after performing the standardization.

Keywords: Standardization, Polyherbal formulation, Ayurveda and Physicochemical Evaluation.

Introduction

India has a rich cultural heritage of traditional medicines which chiefly comprised the two widely flourishing systems of treatments i.e. Ayurveda, Siddha and Unani systems since ancient times. The development of these traditional systems of medicine with the perspectives of safety efficacy and quality will help not only the traditional heritage but also rationalize the use of natural product in healthcare. [1-2] Substantial original documentation for the more organized systems of medicine still exists. Large expanses of local ethnic medicine, folklore, etc. were passed on to the present generation only by word of mouth. Medical education was personalized to a small group of students or sometimes a single individual. Although several original codified texts like the Charak Samhita of exist with specific herbal formulas, the physicians down the ages took liberty to modify these formulas according to prevailing local conditions or personalized them for individual patients. In course of time, though the name remained unchanged, the formula of the original preparation went through successive changes. This resulted in the same preparation having different compositions as well as different therapeutic indications. Due to all these reasons standardization of herbal formulations is essential to assess the quality of the drug.[3-5] The paper present development of methods for the evaluation of Divya churna containing *Cassia angustifolia* as the main ingredient. It consists of fine powders of *Cassia angusifolia* (laxative) - 1.50 gm, *Terminalia chebula* (laxative) - 1 gm, *Foeniculum vulgare* (Stimulant) - 0.50 gm, *Zingiber Officinale* (Carminative) - 0.50 gm, *Rosa centigolia* (Aromatic) - 0.50 gm, Rock salt (Reduce Burning of Stomach) - 0.50 gm, *Ipomoea nil* (Laxative) - 0.50 gm.

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Material and methods

The samples were collected from physician and manufacturers of Divya Pharmacy, Pvt. Ltd. (sample A) which is being used as a laxative stomachic & tonic. For in house preparation, the ingredients were purchased from local raw material traders, which were authenticated (sample B) and used as control. Organoleptic characters of both the samples were recorded. Quantitative analysis of Moisture Content, total ash, acid insoluble ash, Water soluble extractive, Methanol Soluble extractive, Ether Soluble extractive, Ethyl acetate soluble extractive, Chloroform soluble extractive, Petroleum ether soluble extractive, Foreign Organic Matter and loss on drying at 70°C were carried out in triplicate in both the samples according to the prescribed methods and guidelines. Phytochemical analysis was done in both the samples. Preliminary tests were carried out on methanolic extract for presence/absence of phytoconstituents like alkaloids, glycosides, carbohydrates, flavonoids, saponins, tannins, sterols, terpenes, acid, fixed oils and gums.[6-8] Both the samples were also screened for presence of pathogens like *E. coli, S. aureus* and *P. aeruginosa.*

Table: 1 Physicochemical parameters for polyherbal formulations containing *Cassia angustifolia*

Parameter	Standard Value	Sample A	Sample B
Moisture Content	Not more than 12.0	4.80±0.043	5.10±0.012
Total ash	-	3.30±0.031	3.40±0.045
Acid insoluble ash	Not more than 2.5	2.20±0.064	2.4±0.051
Water soluble extractive	-	31.28±0.010	34.20±0.012
Methanol Soluble extractive	-	32.08±0.061	31.20±0.038
Ether Soluble extractive	-	18.80±0.048	16.20±0.027
Ethyl acetate soluble extractive	-	31.60±0.047	32.80±0.061
Chloroform soluble extractive	-	15.30±0.076	16.40±0.028
Petroleum ether soluble extractive	-	16.10±0.092	16.40±0.071
Foreign Organic Matter	Not more than 3	2.00±0.017	1.80±0.082
Loss on drying	-	8.90±0.041	8.70±0.067

Values of mean ± SEM (n = 6)

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Table: 2 Preliminary Phytochemical Tests for polyherbal formulations containing *Cassia angustifolia.*

	Test Performed	Sample A	Sample B
Alkaloids	Mayer's test Dragendorff's test Wagner's test Hager's test	-	-
Glycosides	Borntrager's test Modified Borntrager's test	+	+
Carbohydrates	Benedict's test Tollen's test	+	+
Flavonoids	Sitinoda's test	-	-
Saponins	NaOH solution	+	+
Tannins	$FeCl_3$ solution Lead acetate solution	+	+
Sterols	Liberman-Burchard test Salkowski test	+	+
Acids	$CaCo_3$ solution	+	+
Gums and Fixed Oils	Hydrogen test solution using dilute HCl. NaOH solution	+	+

Results and Conclusion

As a part of standardization procedure, both the samples (A and B) were tested for relevant physical and chemical parameters and also subjected to microbial screening through quality control measures. Result for quantitative analysis for moisture content, total ash, acid insoluble ash, water soluble ash, water soluble extractive, methanol soluble extractive, ether soluble extractive, ethyl acetate soluble extractive, chloroform soluble extractive, petroleum ether soluble extractive, foreign organic matter and loss on drying at 70^{o}C were calculated and found to be within the acceptable range/values. Pathogens *E. coli, S. aureus* and *P. aeruginosa* were found to be absent.

The standardization of polyherbal formulation has become possible by considering various scientific parameters concerning the quality protocol, keeping intact the procedures following Ayurvedic system of medicine. As a part of quality control analysis, for the parameters – total ash content, acid insoluble ash content, foreign organic matter and moisture content, standard ranges exist in the literature. But for the parameters - water soluble extractive, methanol soluble extractive, ether soluble extractive, ethyl acetate soluble extractive, chloroform soluble extractive, petroleum ether soluble extractive and loss on drying, there are not standard ranges available (Table-1). Phytochemical analysis revealed the presence of glycosides, carbohydrates, saponins, tannins, sterols, acids, gums and fixed oils (Table-2).

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