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COMPARATIVE EVALUATION OF DIFFERENT SAMPLES OF CINNAMON

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Received: 08-11-2010; Revised: 23-11-2010; Accepted: 29-11-2010

ABSTRACT
In the recent years, there has been a gradual revival of interest in the use and research on medicinal plants throughout the world because herbal drugs are reported to be safe and do not produce side effects, which are generally associated with synthetic drugs and antibiotics. The major limitation with present herbal drugs is the lack of standardization**.** Standardization of herbal drugs is needed to overcome the problems of adulteration and is most developing field of research now.

The present study aimed to compare the quality of different samples of *Cinnamomum zeylanicum.* The different samples were purchased from local market of different places Hisar (Haryana), Sirsa (Haryana) and Bhatinda (Punjab) of India.

The quality of different samples were evaluated on the basis of various parameters *viz* organoleptic properties, foreign matter, total ash value, acid insoluble ash value, alcohol soluble extractive value, water soluble extractive value, loss on drying, volatile oil content, TLC profile of isolated oil.

The result indicates that sample A was found to be of standard quality as per official compendia while other two samples can be considered as adulterated.

KEYWORDS: Cinnamon**,** *Cinnamomum zeylanicum,* Standardisation

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INTRODUCTION

An estimated 70% of population around the world use traditional medicines derived from plant species for their treatment and cure[1]. Plant materials are used throughout the developed and developing world as home remedies, in over-the-counter drug products, and as raw material for the pharmaceutical industry, and they represent a substantial proportion of the global drug market. In the recent years, there has been a gradual revival of interest in the use and research on medicinal plants throughout the world because herbal drugs are reported to be safe and do not produce side effects, which are generally associated with synthetic drugs and antibiotics. Great emphasis is therefore given in analyzing the drugs used in the traditional systems of medicine for various ailments.

In order to formalize the position of these medicines within the present health care system, a necessary first step is the establishment of standards of quality, safety and efficacy[1]. The present study aimed to compare the quality of different samples of cinnamon.

Cinnamon is one of the well known, oldest and most flavour filled spices. It belongs to the genus *Cinnamomum* of family Lauraceae and commonly known as Dalchini. Cinnamon has many species that differ in smell, taste and colours depending upon the native area[2]. *Cinnamomum zeylanicum* (Lauraceae), which originates from the island of Sri-Lanka (formerly called Ceylon) southeast of India. *Cinnamomum zeylanicum* is also known as Ceylon cinnamon. it has been used for its antidiabetic, anti-nociceptive, astringent and diuretic activities traditionally[3]. *Cinnamomum zeylanicum* has many biological properties as analgesic, antiseptic, antispasmodic, aphrodisiac, astringent, carminative, haemostatic, insecticidal and parasiticide. Barks from branches, without the epidermis and subereous layer, is marketed as the commercial cinnamon which has long use in perfumery, culinary and native medicine fields. Camphene, linalool, α-phelendrene, α -terpinene, limonene, β-cymene, α-cariophyllene, cinnamaldheyde and eugenol are some of the compounds found in *C. zeylanicum* essential oil[4].

MATERIALS AND METHODS

Drug Material

The different samples of *Cinnamomum zeylanicum* were procured from three different places Hisar (Haryana), Sirsa (Haryana) and Bhatinda (Punjab) of India.

Organoleptic characters

Organoleptic characters of plant were studied by unaided sensory organs and with the help of simple microscope.

Foreign matter

Foreign matter was analyzed by spreading 25gm of sample in a white clean paper and examined by unaided eye in daylight[5,6].

Extractive values

Alcohol soluble extractive and water soluble extractive with reference to the air dried drug were determined[5,6].

Determination of loss on drying

Loss on drying was determined by oven drying method. 5 g of well mixed sample was accurately weighed in clean, dried crucible. The crucible was allowed in oven at 105 °C for 6-12 h until a constant weight was obtained. The percentage loss on drying was calculated with reference to initial drug[506].

Determination of ash value

Ash determination furnishes a basis for judging the identity and cleanliness of a drug and gives information relative to its adulteration with inorganic matter. Hence ash value, acid insoluble ash was determined[5,6].

Volatile oil isolation

The volatile oil was isolated using steam distillation method by Clevenger's Apparatus. The percentage yield of volatile oil was calculated.

TLC profile of volatile oil

Thin layer chromatography (TLC) analysis of essential oil was performed on silica gel G. The cinnamon oil was applied using capillary tube to TLC plates and developed (93:7 toluene/ethyl acetate).the plate was sprayed with vanillin in sulphuric acid.

RESULTS AND DISCUSSION

The results of various quality parameters evaluated for different samples are shown in table 1. The results showed that sample A was found to be superior most among the all tested samples where as sample B was found to be inferior most.

The ash value is determined to remove all traces of organic matter. On incineration, crude drugs' normally leave an ash usually consisting of carbonates, phosphates and silicates of sodium, potassium calcium and magnesium. The total ash of a crude drug reflects the care taken in its preparation. Extractive values of crude drugs are useful for their evaluation, especially when the constituents of a drug cannot be readily estimated by any other means. Further, these values indicate the nature of the constituents present in a crude drug.

Cinnamon is medicinally useful as drug mainly because of its volatile oil content hence volatile content may be considered as one of various indicators of quality in cinnamon. Foreign matters, morphological characters, loss on drying are other indicators of quality.

CONCLUSION

The different samples of cinnamon were studied in which sample A was found to be best by calculating different parameters like morphological characters, total ash value, acid insoluble ash value, alcohol and water soluble extractive value, foreign matter, loss on drying, volatile oil content and TLC plates.

The present research work was done with a view to emphasize on the quality of crude drugs present in the market.

ACKNOWLEDGEMENT

The authors are thankful to Dr. Rajendar Singh Sra, Chairman and Dr. N. Mahadevan, Principal, Rajendra Institute of Technology and Sciences, Sirsa for their constant encouragement.

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Table 1: Evaluation of organoleptic and physiochemical parameters of different samples of Cinnamon

PARAMETER	SAMPLE1	SAMPLE2	SAMPLE3	STANDARD	
Source (city, State)	Hisar, Haryana	Bhatinda, Punjab	Sirsa, Haryana	B.P. 2009	**The Ayurvedic Pharmacopeia of India**
Foreign Matter	1.2%	2.9 %	1.8%	--	Not more than 2%
Color of Outer surface	Dull yellowish brown	yellowish brown (comparativ ely darker)	yellowish brown (comparative ly darker)	dull yellowish brown	yellowish brown
Inner surface	Darker compared to outer surface	Darker compared to outer surface	Darker compared to outer surface	Darker	Darker
Striations	wavy longitudinal	wavy longitudinal	wavy longitudinal	wavy longitudi nal	longitudinally elongated reticulation
Fracture	Short	Fibrous	short	Short to fibrous	Splintery
Odour	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant
Alcohol Soluble Extractive Value	6.5%	4.2%	4.7%	-	Not less than 2%
Water Soluble Extractive	10.8%	4.1%	5.2%	--	Not less than 3%
Loss on Drying at 105^0C	5.1%	9.4%	7.2%	--	--
Total Ash	2.5%	6.6%	4.6%	Not more than 6%	Not more than 3%
Acid insoluble ash value	1.8%	4.8%	3.9%	---	Not more than 2%
Volatile Oil	1.6%	0.9%	1.2%	Not less than 1%	Not less than 1%
Color of oil	Clear, slight yellow	light yellow	Clear, light yellow	Clear, light yellow	---
No of spots	7 spots	4 spots	5 spots	---	---
R_f	0.73 0.61 0.53 0.47 0.42 0.36 0.23	0.53 0.47 0.42 0.36	0.73 0.53 0.47 0.42 0.36	Visualizi ng by vanillin sulphuric acid	---

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