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Phytochemical Analysis of the Bharangi Mula Arka-*Clerodendrum serratum* (L.) Prepared by Bharangi from Wayanad and Punjab

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ABSTRACT

The term "Arka" refers to "the essence of drug (distillate) that came after processing." Bharangi—Clerodendrum serratum (L.) belongs to the Verbinaceae family, has a bitter and pungent flavour, ruksha and Laghu qualities, a hot potency, and reduces Kapha and Vata. There is no mention of bharangi moola arka's specific therapeutic action in the text. These qualities vary depending on where they are collected, so this study analysed and compared arka prepared by Bharangi moola —Clerodendrum serratum (L.) collected from Waynad, Kerala (Sample A), and Punjab (Sample B). In both Sample A and Sample B, the difference in loss on dry (0.573), total ash (0.361), alcohol soluble extract (0.802), and water soluble extract (2.648) was within standard limits. The Bharangimoola Arka prepared from Sample A and Sample B differ in the following ways: Refractive Index - 0.01153, Specific Gravity - 0.0113, volatile matter - 0.01%, boiling point - 0020C -0030C, and Ph - 0.717. The observed between raw drugs is comparatively greater than the difference observed between Arka.

Keywords: *Bharangi, Clerodendrum serratum, Arka, Desha, Ayurveda, Moola*

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INTRODUCTION

The word "Arka" is found in Arkaprakasha is derived from the word "agama" which means "that which is came after the distillation". It implies "the essence of drug (distillate) which came after processing [1]. Bharangi—*Clerodendrum serratum* (L.) belongs to Verbinaceae family mentioned in Charaka Samhita under Pureesha Sangrahaneeya Gana [2] – group of herbs which increases bulkiness of stool, Pippalyadi Gana in Sushruta Samhita [3] and Astanga Sangraha [4] and Arkadi [5] and Surasadi Gana [6] in Astanga Hrudaya. Pippalyadigana of Sushruta Samhita acts as a good appetizer and is an absorbent of intestinal mucous and unassimilated lymph chyle, possesses range of its therapeutical application includes catarrh, deranged Kapha and Vata, non-relish for food, abdominal glands, colic and gastralgia. As per Astanga Sangraha Pippalyadi Gana is useful in rhinitis, tumor, pain abdomen, and reduces Kapha, Ama, increases digestion and metabolism. Arkadi Ganahels in reducing Kapha, Meda, Visha and Useful in Krimi and Kustha. Surasadi Gana helps to reduce rhinitis, cough, asthma and Krimi. Specific therapeutic action of bharangi moola arka is not mentioned in any of the text. Bharangi Moola possess bitter and Pungent taste, possess ruksha and Laghu qualities, hot potency, and reduces Kapha and Vata. These above said qualities changes according to place of Collection, this study analyzed and compared arka prepared by Bharangi moola —*Clerodendrum serratum* (L.) collected from Waynad, Kerala (Sample A), and Punjab (Sample B)..

MATERIAL AND METHODS

COLLECTION OF THE PLANT SAMPLES

Two samples of Bharangi Moola roots were obtained from a Kozhikode pharmacy, Wayanad Kerala, (Sample A), and Punjab, Amrut Kesari Bangalore (Sample B). After receiving the samples raw drug was

authenticated by the Department of Dravya Guna- Ayurveda Pharmacology. Then arka was prepared at teaching Pharmacy of the Institution.

METHOD OF ANALYSIS OF BHARANGI MOOLA

Loss on drying at 105ºC by drying at 105˚C for 5 hours in hot air oven. *Total Ash* was obtained by incinerating in a crucible at temperature not exceeding 450˚C until carbon free ash was obtained. *Acid insoluble Ash* was obtained by adding 25ml of dilute HCl and by dring on a hot plate. *Alcohol soluble extract was obtained* by adding 100 ml of distilled Alcohol (approximately 95%). After Shaking occasionally for 6 hours, allowing it to stand for 18 hours and Keeping it in an air oven at 105°C for 6 hours, cool in desiccator for 30 minutes and weigh. *Water soluble extract was by adding* 100 ml of distilled water, and drying in a hot air oven at 105°C for 6 hours. Determination of pH was done by dissolving one tablet of pH 4, 7 and 9.2 in 100 ml of distilled water. Refractive index, Specific gravity, Viscosity of the sample also assessed.

METHOD OF ANALYSIS OF BHARANGI MOOLA ARKA

Refractive index, Specific gravity, Volatile matter, Boiling Point and Total Acidity was observed in Bharangi moola arka**.**

Table 1: Standardization parameters of *Bharangi moola*

Parameters	Sample B	Sample A
	Results n = 3 %w/w	*Results n = 3 %w/w*
Loss on drying	9.215 ± 0.015	9.788± 0.012
Total ash	2.09 ± 0.007	2.451± 0.003
Acid insoluble ash	0.0 ± 0.0	0.0983± 0.01
Water soluble ash	0.60 ± 0.01	-
Alcohol soluble extractive	8.06 ± 0.01	7.258± 0.01
Water soluble extractive	17.43 ± 0.01	20.078± 0.01

Table 2: Standardisation parameters Bharangi moola arka *Results n = 3 %w/w*

Parameters	Sample A	Sample B
Refractive index	1.3317	1.32017
Specific gravity	0.998	1.0093
Volatile matter (%)	0.02	0.03
Boiling point	102º-103ºC	100^0C
Ph	6.73	6.013

RESULTS

Root of the Bharangi, consists of loss on dry in Sample A -9.788% and in Sample B 9.788%. In Sample A 2.451% and in Sample B 2.09% of total ash was observed. In Sample A 1.258% and in Sample B 2.06% alcohol soluble extract was observed. In Sample A 8.078 % and in Sample B 5,43% water soluble extract was observed [7] (Table 1). Bharangimoola Arka prepared from Sample A and Sample B possesses Refractive Index 1.3317 and 1.32017, Specific Gravity of Sample A 0.998 and Sample B 1.0093, volatile matter 0.02 % and 0.03, boiling point 102º-103ºC and 100^0C and pH 6.73 and 6.013 respectively. (Table 2).

DISCUSSION

The pharmaceutical aspects of Arka Kalpana are clearly mentioned in Ravana's Arka Prakasha, which describes adding water to the drugs and leaving them overnight. This should be poured into the Arka yantra and allowed to boil. Vapours condensate and collect in a receiver. The active ingredients are contained in the aliquots collected in between and can be combined to ensure Arka uniformity. Ratio of water for the prepration of Arka varies according to hardness of the drugs. If the drugs are soft and wet, add 6 times more water and extract Arka up to 60%; if the drugs are wet and mildly hard, add 8 times more water and extract Arka up to 60% - 70%. If the drugs are dry and soft, they should be mixed with 6-8 times of water and boiled until 60% -70% Arka is obtained. If the drugs are dry and hard, crush them into a coarse powder and soak them in 10 times of water overnight with a mild fire to obtain 60%- 70% Arka. If the drugs are dry and moderately hard, they do not need to be crushed, and 8 times of water is added and mild fire to obtain 60% of Arka[7].

In the laboratory, 4 g of the sample will be mixed with 100 ml of distilled water and shaken occasionally for 6 hours before being allowed to stand for 18 hours to extract water-soluble extract. In a pre-weighed 100ml beaker, 25ml of the filtrate was evaporated over a water bath. The filtrate was then placed in a 105°C hot air oven for 6 hours. The experiment will be repeated twice, and the average value will be used. The root of the Bharangimoola Consists of loss on dry in Sample A -9.788% and in Sample B 9.215% with the difference0.573%which determine the moisture content of a drug. The results of ash value for roots of

Bharangi showed in Sample A is 8.451% and in Sample B is 7.09% with the difference 0.361%. The ash value is useful in determining the authenticity and purity of a sample, and it is also an important qualitative standard. In Sample, A 7.258% and in Sample B 8.06% alcohol soluble extract was observed difference was0.802%. Similarly in Sample, A 20.078 %, and in Sample B 17.43% with the difference2.648%water soluble extract was observed which was in accordance with the standard limits. Where as the Bharangimoola Arka prepared from Sample A and Sample B possesses Refractive Index 1.3317 and 1.32017 with a difference 0.01153, Specific Gravity of Sample A 0.998 and Sample B 1.0093 with the difference 0.0113, volatile matter 0.02 % and 0.03% with the difference 0.01%, boiling point 102º-103ºC and 100^{0}C with the difference 002^{0}C -003^{0}C and Ph 6.73 and 6.013 with the difference0.717 respectively. The observed between raw drugs is comparatively greater than the difference observed between Arka. However, these differences are within the normal limit. In this study identifying volatile components was not done due to the non-availability of a Comparator. Also, Phyto chemical values were not analysed in Ark, hence exact comparison of the profile was not possible with raw drugs with arka. For which analysis should be carried out using Gas Chromatography and Mass Spectrometry. However, Bharangimoola Arka was found to have a more sustained effect in reducing bronchial asthma in the acute stage than Salbutamol Sulphate, with no adverse effects such as tremor or mouth dryness [8, 9].

CONCLUSION

The difference in loss on dry (0.573), total ash (0.361), alcohol soluble extract (0.802), and water soluble extract (2.648) was within standard limits in both Sample A and Sample B. The following characteristics distinguish Bharangimoola Arka prepared from Sample A and Sample B: Refractive Index - 0.01153, Specific Gravity - 0.0113, volatile matter - 0.01%, boiling point - 0020C -0030C, and Ph - 0.717. The observed difference between raw drugs is comparatively greater than the observed difference between Arka.

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