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Standardization of quality control parameters of some ethnomedicinal plants

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Abstract- Medicinal plants have been used as traditional treatment for numerous human diseases since thousands of years. Medicinal properties of plants are due to the active chemical constituents present in different parts of plants. The present investigation was carried out to study one of the physicochemical parameters of some ethnomedicinal plants. Standardization of the plants were done with the help of extractive values of leaves. Water-soluble extractive value is higher in *Adhatoda vasica* and *Vitex negundo* which is 23.18 ± 1.83, 8.54 ± 2.0 respectively. In *Centella asiatica* methanol-soluble extractive value 17.70 ± 0.70 is higher. The result of the present study may be used for the identification and standardization of the plant material and phytochemical screening for determination of active constituents.

Key words: Ethnomedicinal, physicochemical, extractive values.

INTRODUCTION

Mankind has been using plants as therapeutic agents for thousands of years and continue to rely on them or health care needs. According to a WHO estimate, around 80% of the world's inhabitants depend on traditional medicine or their primary health care, majority of whom use plants or their active principles. Plants used in traditional medicine contain a wide range of ingredients that can be used to treat chronic as well as infectious diseases.[1]

Tribal's of Jharkhand are also utilizing a large number of plant species as herbal remedies in various disease and ailments. The present study has brought light on some interesting plants having the potential of ability to control ailments.

MATERIALS & METHODS

Plants were collected from local areas. The collected specimens were botanically identified with the help of flora Botany of Bihar and Orissa Vol.1, Vol. 2, Vol.3.

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The collected plant was washed with tap water. The plant was air dried thoroughly under shade at room temperature for 2 weeks to avoid direct loss of phytoconstituents from sunlight. The shade dried material was powdered and was stored in the air tight container and a portion of it was used for further analysis.

For the determination of extractive value accurately weighed 5.0 g of coarsely powdered air-dried material was placed in a glass-beaker and macerated with 50 ml of the solvent for 6 h, shaking frequently, and then allowed to stand for 24 to 96 h. the mixture was filtered rapidly in five different weight beakers, taking care not to lose any solvent. The liquid extracts were then left to evaporate. After evaporation the final weight of the beakers were taken. The difference in weight was calculated to determine the respective value.

$$\text{Extractive value \%} = \frac{\text{Extractive weight in solvent}}{\text{Weight of drug material}} x100$$

RESULTS & DISCUSSION

The study of extractive values can serve as a valuable source of information and provide suitable standards to

determine the quality of plant material in future investigations or application.

Extractive values of *Adhatoda vasica, Vitex negundo* and *Centella asiatica* leaves are depicted in Table 1, 2 and 3 respectively. Which shows highest 23.18 ± 1.83 water-soluble extractive value and lowest 3.64 ± 0.89 benzene-soluble extractive value of plant *Adhatoda vasica*, highest 8.54 ± 2.0 water-soluble extractive value and lowest 3.47 ± 1.71 benzene-soluble extractive value of plant Vitex negundo, for the plant *Centella asiatica* 17.70 ± 0.70 methanol-soluble extractive value is highest and benzene-soluble extractive value of 2.56 ± 0.98 is lowest. Higher water-soluble extractive value of *Adhatoda vasica* and *Vitex negundo* leaves implies that water is a better solvent of extraction, but in case of plant *Centella asiatica* methanol-soluble extractive value is higher than the water-soluble extractive indicating presence of more methanol soluble components in the drug.

In the present study, the criteria to choose suitable solvent depend upon the extractive potential of a solvent.[2] Estimation of extractive values indicates the amount of phytochemicals present when extracted with a particular solvent. The compositions of phytoconstituents vary with the type of solvent used.[3]

Table 1: Extractive values of *Adhatoda vasica* leaves

S.N.	Nature of Solvent	Colour	Extractive value (%)
1.	Ethanol	Green	11.74 ± 1.84
2.	Methanol	Brownish green	12.58 ± 1.24
3.	Acetone	Green	4.96 ± 0.28
4.	Benzene	Green	3.64 ± 0.89
5.	Aqueous	Brown	23.18 ± 1.83

Values are presented in average of three replicate ± standard deviation

Table 2: Extractive values of *Vitex negundo* leaves

S.N.	Nature of Solvent	Colour	Extractive value (%)
1.	Ethanol	Green	7.38 ± 0.98
2.	Methanol	Green	7.63 ± 2.02
3.	Acetone	Green	3.92 ± 1.61
4.	Benzene	Brown	3.47 ± 1.71
5.	Aqueous	Brownish yellow	8.54 ± 2.0

Values are presented in average of three replicate ± standard deviation

Table 3: Extractive values of *Centella asiatica* leaves

S.N.	Nature of Solvent	Colour	Extractive value (%)
1.	Ethanol	Green	12.23 ± 0.95
2.	Methanol	Green	17.70 ± 0.70
3.	Acetone	Green	3.4 ± 1.20
4.	Benzene	Brownish green	2.56 ± 0.98
5.	Aqueous	Yellowish	17.23 ± 2.09

Values are presented in average of three replicate ± standard deviation

CONCLUSION

In the present work, a medicinally useful plant in the Indian system of medicine were selected. Extractive values can be used as reliable aid for detecting adulteration. These simple but reliable standards will be useful to a person in using the drug as a home remedy. Also the manufacturers can utilize them for identification and selection of the raw material for drug production.

Crude drugs contain a number of constituents and these have a selective solubility in different solvents. Water, alcohol, alcohol/water mixtures, generally 45%, 60%, 90% ethanol, ether are used as solvents. Extractive values are primarily useful for the determination of exhausted or adulterated drugs. The extractive value of the crude drug determines the quality as well as purity of the drug. Water-soluble extractive value plays an important role in evaluation of crude drugs. Less extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying or storage or formulating.

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