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Physico chemical feature and phytochemical screening of some selected plants used in the rituals of munda tribe of Khunti District

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Abstract- The present study was aimed physico chemical and preliminary phytochemical screening of *Eleusine coracana* Gaertn. (leaves and seeds), *Plumeria rubra* L. (stems), and *Semecarpus anacardium* L. (leaves and stems) which are used in the rituals of Munda tribe of Khunti district. The powdered drug of leaves, seeds and stems were subjected to determination of moisture content, ash value and extractive value. The result of analysis shows that the moisture content (66.69 ± 0.052, 78.90 ± 0.01, 57.44 ± 0.00, 56.87 ± 0.014) respectively. Total ash value is (18.75 ± 0.014, 5.72 ± 0.016, 13.19 ± 0.018, 16.21 ± 0.02, 8.23 ± 0.016) respectively. The aqueous extractive value is (6.76 ± 0.047, 1.66 ± 0.058, 6.86 ± 0.05, 6.14 ± 0.032, 4.54 ± 0.047) respectively which is higher than the ethanolic and methanolic extractive value. Therefore aqueous extract is used for phytochemical screening. The phytochemical screening shows the presence and absence of alkaloids, reducing sugar, fat and oil, tannin and phenol, flavonoids, saponin, resin, amino acid, steroid and glycosides.

Key words: physico chemical, phytochemical screening, rituals, Munda, Khunti

INTRODUCTION

India is a country with large ethnic society. These indigenous and ethnic people have great knowledge about biodiversity. India is one of the important biodiversity centers with presence of over 45000 different plant species. Of these, about 15000-20000 plants have good medicinal value. However, only 7000-7500 species are used for their medicinal values by traditional communities.[1] A ritual is a religious ceremony which includes a sequence of actions performed in a systematic order. These actions are significant tools to conservation of biodiversity.

Jharkhand is the land of forest where various ethnic groups like Santhal, Munda, Oraon, Ho, Kharia, Bhumij, Paharia, Kol etc.are residing. All tribals are closely related with the nature but their knowledge about different plants and their medicinal and ethnobotanical uses are different.[2]

Parts of South Chotanagpur commissionary, Khunti is the 23rd district of Jharkhand state. It has a total area of about 2,611 sq.km. and around 40% of the total area is covered by forest. As per 2011 Census of India, Khunti district has a population of 5,31,885 on which 91.49% of population lives in rural areas and 74% of the population being tribal. Khunti district is dominated by Munda tribe. Throughout the year they perform and celebrate different rituals and festivals on different occasions like Mage Parab, Phagu Parab, Baa Parab, Batauli Parab, Karam Parab, Jom Nawa Parab, Sohrai, birth and naming ceremony, marriage, death rituals etc. In different occasions they utilize various plants and plant parts like leaf, stem, bark, root, flowers etc.

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Some studies have been done on traditional knowledge of tribals and it is found that tribals are closely related with the nature but their knowledge about different plants and their uses are different.[3] Almost all the festivals are related to a plant or a crop and all these plants have uses with valid scientific name.[4] Some studies have been done on traditional knowledge of tribals of Khunti district. Indigenous traditional knowledge of some aquatic and marshy wild edible plants used by the Munda tribe of district Khunti, Jharkhand, India.[5] Diversity and traditional knowledge on some less known edible wild herbaceous plant resource from district Khunti, Jharkhand.[6] Underutilized weeds of family Amaranthaceae used as edibles by the Munda tribe of Jharkhand, India.[7] Traditional knowledge of plants- unconventional wisdom of an ethnobotanist of a Khunti village.[8] present study deals with physico chemical feature and phytochemical screening of some selected plants which are used in the rituals of Munda tribe of Khunti district.

MATERIALS & METHODS

The proposed study was based on personal interviews of various groups like religious prists (Pahan), village headman, local knowledgeable people and laymen. Frequent field trip was conducted during year (2021-2022) and plant specimen were collected for study. The plants were identified with the help of Botany of Bihar and Orissa Vol. I – IV (Reprint 2006 and 2008).[9-10] For further study three plants were selected. These plants are *Eleusine coracana* Gaertn., *Plumeria rubra* L., and *Semecarpus anacardium* L. Fresh leaves and stems were used to determine moisture content. Remaining leaves, stems and seeds were kept for shade drying. After 10-15 days dried specimen was powdered using mechanical grinder and passed through 60 mesh sieves to get the powder of desired coarseness. Powder material was preserved in an air tight container.

The parameters were done to evaluate the total ash, water soluble ash and acid insoluble ash. Extracts of the powdered leaves, stems and seeds were prepared with different solvents for the study of extractive value. Extracts were subjected to preliminary phytochemical screening for their presence or absence of the constituents.[11] The result is presented in table 1, table 2 and table 3.

RESULT & DISCUSSION

Table 1- Physico chemical evaluation of the crude drugs

S. No.	Plant material	Total ash	Acid insoluble ash	Water soluble ash	Moisture content
1	*Eleusine coracana* Gaertn. (leaf) (seed)	 18.75 ± 0.014 5.72 ± 0.016	 0.21 ± 0.00 0.16 ± 0.00	 1.625 ± 0.00 1.885 ±0.00	 66.69 ± 0.052
2	*Plumeria rubra* L.(stem)	13.19 ± 0.018	0.209 ± 0.00	1.737 ± 0.00	78.90 ± 0.01
3	*Semecarpus anacardium* L (leaf) (stem)	 16.21 ± 0.02 8.23 ± 0.016	 0.266 ± 0.00 0.133 ± 0.00	 1.332 ± 0.00 1.915 ± 0.00	 57.44 ± 0.00 56.87 ± 0.014

Table 2 - Extractive value of crude drugs with different solvent

S. No.	Plant	Ethanol Extractive value	Methanol Extractive value	Aqueous Extractive value
1	*Eleusine coracana* Gaertn. (leaf) (seed)	 2.8 ± 0.052 0.7 ± 0.028	 5.82 ± 0.036 1.02 ± 0.150	 6.76 ± 0.047 1.66 ± 0.058
2	*Plumeria rubra* L. (stem)	5.56 ± 0.071	9.64 ± 0.047	6.86 ± 0.05
3	*Semecarpus anacardium* L. (leaf) (stem)	 5.42 ± 0.036 1.54 ± 0.055	 4.64 ± 0.023 1.28 ± 0.023	 6.14 ± 0.032 4.54 ± 0.047

Table 3- Preliminary phytochemical screening of three plant parts with Aqueous Extract

S. No.	Experiment	*Eleusine coracana* Gaertn. (leaf)	*Eleusine coracana* Gaertn. (seed)	*Plumeria rubra* L. (stem)	*Semecarpus anacardium* L. (leaf)	*Semecarpus anacardium* L. (stem)
1	Alkaloids (Mayer's test)	+	+	++	++	++
2	Reducing sugar (Benedict test)	++	++	++	+	+
3	Fat and oil (Filter paper test)	-	-	-	-	-
4	Tannin and Phenol (Ferric chloride test)	++	+	+++	++	++
5	Flavonoid test (Alkaline reagent)	+++	++	+++	+++	+++
6	Saponin (Foam test)	-	+	+	-	-
7	Amino acid (Ninhydrin test)	+	+	+	+	+
8	Resin	+	++	+++	+	+
9	Steroid	-	-	+	+	+
10	glycoside	-	-	+	+	+

+ denotes the presence and – denotes the absence of the respective group of compounds .

The study provides the physico chemical evaluation and phytochemical screening of drugs of selected plants. Result shows that moisture content of *Plumeria rubra* L. (stem) (78.90 ± 0.01) is highest and *Semecarpus anacardium* L (stem) (56.87 ± 0.014) is lowest. Total ash value of *Eleusine coracana* Gaertn. (leaf) (18.75 ± 0.014) is highest and *Eleusine coracana* Gaertn.(seed) (5.72 ± 0.016) is lowest. Acid insoluble ash value of *Semecarpus anacardium* L. (leaf) (0.266 ± 0.00) is highest and *Semecarpus anacardium* L. (stem) (0.133 ± 0.00) is lowest. Water soluble ash value of *Semecarpus anacardium* L. (stem) (1.915 ± 0.00) is highest and *Semecarpus anacardium* L. (leaf) (1.332 ± 0.00) is lowest. Aqueous extractive value of *Eleusine coracana* Gaertn. (leaf and seed) (6.76 ± 0.047, 1.66 ± 0.058 respectively) and *Semecarpus anacardium* L. (leaf and stem) (6.14 ± 0.032, 4.54 ± 0.047) is higher than the ehanolic and methanolic extract. Methanol Extractive value of *Plumeria rubra* L. (stem) (9.64 ± 0.047) is highest and Ethanol Extractive value (5.56 ± 0.071) is lowest.

CONCLUSION

The plant parts of these plants are used as food and medicinal drug by tribal people without standardization. The standardization of a crude drug is an essential part to authenticity of the medicinally useful plants. The result of this study could inform about some characteristics of these plants.

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REFERENCES

1. **Subbu R. R. and Prabha A. C. 2009.** Medicinal plant diversity of Virudhnagar district, Tamil Nadu. *Current biotica,* **3(3):** 373- 385.
2. **Topno S. and Ghosh T. K. 1999.** Correlations of uses of medicinal plants by tribals of Chotanagpur with other tribals of India. *J. Econ. Tax. Bot.* **23(1):** 143-146.
3. **Kujur S. and Kandir K. 2017.** Ethnomedicinal and phytochemical studies of Hadia (Rice Beer) used by some tribes of south Jharkhand. Ph.D. Thesis.
4. **Singh A. K. and Pandey S. K. 2019.** An analytical study of ethnomedicinal and sacred plants of Jharkhand. *International journal of current microbiology and applied sciences*. **8(2):** 1837-1841.

5. **Singh G. and Kumar J. 2013.** Studies on indigenous traditional knowledge of some aquatic and marshy wild edible plants used by the Munda tribe of district Khunti, Jharkhand, India. *International journal of Bioassays.***3 (2):** 1738-1743.

6. **Singh G. and Kumar J. 2016.** Diversity and traditional knowledge on some less known edible wild herbaceous plant resource from distirct Khunti, Jharkhand, India. *International journal of Bioassays.* **5(5):** 4557-4562.

7. **Singh G. and Kumar J. 2019.** Studies on underutilized weeds of family Amaranthaceae used as edibles by the Munda tribe of Jharkhand, India. *Annals of Plant Sciences.* **8(2):** 3495-3498.

8. **Kiro N. and Srivastava A. K. 2015.** Traditional knowledge of plants: Unconventional wisdom of an Ethnobotanist of a Khunti village. *International journal of scientific research.* Vol. **4**.

9. **Haines H. H. 2006.** The Botany of Bihar and Orissa. Part III – IV.

10. **Haines H. H. 1924.** The Botany of Bihar and Orissa. Part V.

11. **Yadav R. N. S., Agarwala M. 2011.** Phytochemical analysis of some medicinal plants. *J Phytol*. **3(12):** 10-14.

12. **www.khunti.nic.in, District Khunti, Government of Jharkhand, India.**

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