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RESEARCH ARTICLE

Phytochemical analysis of certain aromatic medicinal plants of Sivasagar district, Assam especially alkaloid and saponin

■ **N. BARUWATI AND N. BARUAH**

SUMMARY

This paper deals with presence of alkaloid and saponin in certain aromatic medicinal plants of sivasagar district which is used by the different tribes of Assam for treatment of different diseases. In this phytochemical analysis, total of 38 plant species were collected and analysed. 20 species were found with the presence of alkaloid and 09 species with the saponins. In 3 species both alkaloid and saponin were found.

Key Words : Aromatic plants, Phytochemical analysis

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Sivasagar district of Assam enjoys a unique landmark from the floristic point of view and its geographical location is endowed with a flora ranging from tropical vegetation of Nagaland to the tropical evergreen vegetation of Assam and tropical vegetation of Arunachal Pradesh. The total geographical area is 2668 sq. km. and it lies between $94^0 15/$- $95^0 45/$ east longitude and $26^0 45/$ -$27^0 15/$ north latitude. The climate of this area is tropical monsoon and average rainfall is 220m.

MEMBERS OF THE RESEARCH FORUM

Author to be contacted :
N. BARUAH, Department of Botany, Sibsagar Girls' College, SIVASAGAR (ASSAM) INDIA
Email: nibaditabaruwati21@gmail.com

Address of the Co-authors:
N. BARUWATI, Department of Botany Gargaon College, Simaluguri, SIVASAGAR (ASSAM) INDIA

Due to it agronomic conditions Sivasagar district has always been recognized as one of the most populated region of different ethnic groups. Its increase in density of population, the district is under a severe threat from land use pattern and eventually the land and water bodies supporting natural vegetation are being brought under human habitation and related activities.

Phytochemical survey of plant for therapeutically important compounds like alkaloid and saponin is an important area of fundamental research because of its relevance is providing clues for pharmacological evaluation of plant extracts and constituents.

In the present work on phytochemical study in Sivasagar district of Assam quite a large number of plant species associated with the treatment of large number of diseases among the ethnic communities inhabiting in the study area has been brought in to light.

MATERIAL AND METHODS

According to plan of work for phytochemical analysis of aromatic medicinal plants different collected samples were analysed for alkaloid and saponins followed by Fransworth (1960) and Wall *et al*. (1954).

Chemical analysis of certain aromatic medicinal plants for alkaloids and saponins :

Experimental method :

Presence or absence of alkaloids, and saponin in certain specific plants were examined by chemical

Table 1: Plant species surveyed for presence or absence of alkaloid and saponin

Sr. No.	Plant species	Plant parts used	Result	
			Alkaloid	Saponin
1	*Aegle marmelos*	Sb	-	-
2.	*Ageratum conyzoides*	Lvs	+	-
3.	*Alstonia scholaris*	Sb	-	-
4.	*Alternanthera philoxeroides*	Wp	+	-
5.	*Amaranthus spinosus*	Ar	+	+
6.	*Aristolochia roxburghiana*	Lvs	-	+
7.	*Bauhinia variegata*	Lvs	-	-
8.	*Boerhavia diffusa*	Lvs	+	-
9.	*Bredelia crenulata*	Lvs	-	-
10.	*Calotropis giganta*	Rt	+	-
11.	*Cariya arborea*	Sb	+	-
12.	*Casia fistula*	Sb	-	-
13.	*Chenopodium album*	Lvs	-	+
14.	*Curcuma zedoaria*	Rh	+	-
15.	*Desmodium gangaticum*	Lvs	+	-
16.	*Dillenia indica*	Lvs	-	-
17.	*Drymaria cordata*	Wp	-	+
18.	*Garuga pinnata*	Sb	-	-
19.	*Houttunia cordata*	Lvs	-	-
20.	*Hydrocotyl sibthorpioides*	Wp	+	+
21.	*Lantana camera*	Lvs	+	-
22.	*Litsea cubeba*	St	-	-
23.	*L. salcifolia*	St	+	-
24.	*Mangifera indica*	Sb	-	+
25.	*Michelia champaka*	Lvs	+	+
26.	*Mimusa pudica*	Rt	+	-
27.	*Moringa olifera*	Lvs and Sb	+	-
28.	*Murrya koengil*	Lvs	-	-
29.	*Nycthanthus arbor-tristis*	Lvs	+	-
30.	*Ocimum gratissimum*	Fl	-	+
31.	*Pogostemon benghalensis*	Lvs	-	+
32.	*Ranunculus scleratus*	Wp	+	-
33.	*Ricinus communis*	Lvs and St	+	-
34.	*Scorpia dulcis*	Lvs	-	-
35.	*Syzigium cumini*	Lvs and Sb	+	-
36.	*Vitex negando*	Lvs	-	-
37.	*Zanthoxylum rhesta*	Lvs	+	-
38.	*Zingiber purpurea*	Rh	+	-

analysis. For experimental chemical analysis the samples of the plant species were collected during the time of survey from the different areas of the study site. The plant samples were dried under shade and made in to powder and subjected for extraction and testing. Preparation of extract was followed the method of Fransworth (1960) and Wall *et al*. (1954).

For the chemical analysis the methods described by Kapoor *et al*. (1969-1975) were followed. In this method two Mayers and Dragendroff's reagents were used.

Preparation of extract :

The extracts were prepared following the methods as described by Fransworth (1960) and Wall *et al*. (1954). Details about the extraction are as follows. 25g powdered material of each plant was extracted separately with 200ml of 95 per cent ethanol in Soxhlet apparatus for 8 hrs. This extract was evaporated to dryness under reduced pressure on water bath. This residue was used for alkaloids and saponin test.

Test for alkaloid and saponin :

A small portion of residue 12g obtained after evaporating the ethanol from the extract was dissolved in 5ml of 1 per cent HCl, filtered and tested with Mayer's reagents and Dragendroffs reagent separately. Any precipitate or turbidity with the reagent indicated the possible presence of alkaloids. In order rule out any possibility of a false positive test; a confirmatory test or alkaloid was also performed following the method of Fransworth (1960). A small portion of the residue dissolved in 5ml of 1 per cent hydrochloric acid was filtered and made distinctly alkaline with 28 per cent ammonium hydroxide solution and extracted with an equal volume of 1 per cent hydrochloric acid and Dragendroff reagent. Any precipitate or turbidity confirmed the presence of alkaloids.

A portion of residue, obtained after evaporating the solvent from the extract was dissolved in tape water and shaken vigorously. A honeycomb froth persisting for 15 minutes indicated the presence of saponins. A portion was also dissolved in chloroform and filtered. A few drops of concentrated sulphuric acid and 1ml of acetic anhydride were added to 1ml of iced filtrate. The appearance of blue, bluish green and reddish brown colour, often accompanied by the formation of a pink ring showed the presence of saponins.

RESULTS AND DISCUSSION

Thus, considering the importance of phytochemical survey of aromatic medicinal plants 38 plant sample represented by 25 plant species and 23 families having interesting folklore use from the Sivasagar district were subjected to preliminary phytochemical survey for Alkaloid and saponin.

Certain medicinal aromatic plant species were surveyed for presence or absence of alkaloid and saponins in their extracts. The results are shown in Table 1.

Abbreviations :

Lvs-leaves, Rh- rhizome, Sb- stem bark, St- Stem, Wp- whole plants, Fl- flower, Rt- root, Ar- aerial parts.

Data from the Table 1 revealed that 20 plant species were found positive for alkaloid and 9 for saponin, 3 plant species for both alkaloid and saponin and 12 species were recorded for absence of both alkaloid and saponin.

From these 38 aromatic medicinal plants percentage

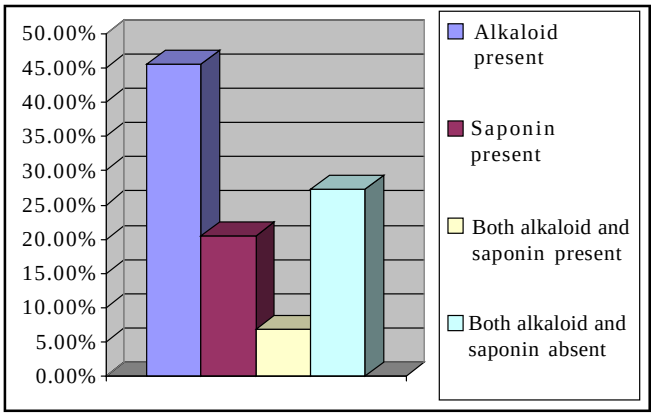

Fig. 1: Percentage of alkaloid and saponin in aromatic medicinal plants

Table 2 : Presence of percentage of alkaloid and saponin in aromatic medicinal plants

Sr. No.	Phytochemical substance	Nos of species	Percentage
1.	No. of species alkaloid present	20	45.46%
2.	No. of species saponin present	09	20.45%
3.	No. of species both alkaloid and saponin present	03	6.82%
4.	No. of species both alkaloid and saponin absent	12	27.27%
	Total	44	

of presence or absence of alkaloid and saponin were calculated (Table 2 and Fig.1).

REFERENCES

Ambasht, S.P. (1986). The useful plants of India.CSIR, NEW DELHI, INDIA.

Borthakur, S.K., Nath, K. and Gogoi, P. (1996). Herbal medicine of Nepalese of Assam in North East India. *Fitoterapia*, **67** (3) 231-333.

Fransworth, N.R. (1960). Biologicl and phytochemical screening of plants. *J. Pharm. Sci.*, **55** : 225.

Kapoor, L.D. Singh, A., Kapoor, S.L. and Srivastava, S.N. (1969). Survey of Indian plants for saponin, alkaloids and flavonoides,*I. Lioydia*, **32** : 297.

Kapoor, L.D. Singh, A., Kapoor, S.L. and Srivastava, S.N. (1971). Survey of Indian plants for saponin, alkaloids and flavonoides, *II.Lioydia*, **34** : 94- 103.

Kapoor, L.D. Singh, A., Kapoor, S.L. and Srivastava, S.N. (1972). Survey of Indian plants for saponin, alkaloids and flavonoides, *III.Lioydia*, **35** : 288-295.

Kapoor, L.D. Singh, A., Kapoor, S.L. and Srivastava, S.N. (1975). Survey of Indian plants for saponin, alkaloids and flavonoides, *IV.Lioydia*, **38**: 221-225.

Wall, M.E., Krider, M.M., Krewson, C.F., Eddy, C.R., Willaman, J.J., Corell, D.S. and Gentry, H.S. (1954). Steroidal sapogenins. VII. Survey of plants for steroidal sapogenins and other constituents. *J. Am. Pharm. Assoc.*, **43**: 1-7.