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Qualitative phytochemical analysis of some ethnomedicinally important plants used in the gynaecological disorders by the Santal and Paharia tribes of Rajmahal Subdivision of Sahibganj District, Sahibganj, Jharkhand.

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ABSTRACT

The secondary metabolites present in the plants play an important role in disease prevention and treatment as the plants possess various antineoplastic, antimicrobial, antioxidant, anti-inflammatory, analgesics, anti-diabetic, anti-hypertensive, antidiarrheal and other properties. Large no of plants is used by tribals for treating various ailments since ages. A qualitative study was done to investigate the phenols, alkaloids, terpenoids, flavonoids etc found in plants which make them medicinally important for the treatment of gynaecological disorders.

Key Words - Ethnomedicine, Gynaecology, Qualitative, Secondary metabolites.

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INTRODUCTION

Medicinal plants have been the identified (Sawant *et al.*, 2014) and the main remedy to treat various ailments for a long time many drugs have been developed from traditional medicine (Francesco *et al.*, 2015). Plants synthesize a variety of chemical compounds that are used to defend themselves from predators. There are about 12000 compounds which have been isolated so far, almost 10% of the total plants (Apsell *et al.*, 2006; Lai & Roy. 2004). Chemical compounds that are naturally present in the plants are called phytochemicals (Greek: Phyton=plant) and attributed to positive or negative health effects (Silva *et al.*, 2017). The biggest bio reservoirs of various phytochemicals are the medicinal plants used in different diseases and ailments and the medicinal properties of the plants are determined by the phytochemical constituents (Ezeonu & Ejikeme, 2016). Important phyto chemicals which are distributed in various parts of plants include alkaloids, flavonoids, phenolics, tannins, saponins, steroids, glycosides, terpenoids etc (Sheel *et al.*, 2014). Nature is a unique source of structures of high phytochemical diversity representing phenolics (45%), Terpenoids and steroids (27%) and alkaloids (18%) as a major groups of phytochemicals (Saxena *et al.*, 2013). These compounds though seem to be non-essential to the plant producing them but play a vital role in the survival by mediation of ecological interactions with competitors, protect them from diseases, pollution, stress, UV rays and also contribute for colour, aroma and flavour with respect to the plant. The metabolites produced by the plants protect themselves from biotic and abiotic stress and these have turned into medicines which are used by people to treat diseases (Njoku & Obi, 2009; Kocabas, 2017). The aim of the present study was to identify the phytochemicals in these plants which make them gynecologically important among the Santal and Paharia tribe of the Rajmahal

subdivision of the Sahibganj District, Jharkhand, India.

MATERIALS AND METHOD

Collection and identification of plant material:

Fresh plants/plants parts were collected from the Rajmahal hills of Rajmahal subdivision, District Sahibganj, Jharkhand, India. The plants, parts, family and common names were screened. The taxonomic identities of these plants were confirmed by Sido Kanhu Murmu University, Dumka and the herbarium of the specimen were preserved in the University Department of Botany, Sido Kanhu Murmu University, Dumka. Fresh plant was washed under running tap water, air dried and then homogenized to fine powder and stored in air tight bottles.

Extract preparation:

100 gm of powdered plant part was measured into a conical flask and 200 ml of solvent such as methanol, acetone, benzene or water was added and packed into the Soxhlet apparatus, for 48 hours, and labelled. Finally, the extract was filtered with Wattman no 1 filter paper and the filtrate obtained was stored in air tight bottles. A semi-solid mass was then obtained by heating in a water bath. The dried extract was stored in the freeze at 4°C for further use in phytochemical analysis.

PHYTOCHEMICAL SCREENING

Phytochemical analysis:

Biochemical tests were done using the extract with acetone, methanol, benzene and water. Standard methods of Sofowara, Trease and Evans and Harbone were used to identify the presence of Alkaloids, Tannin, Saponins, Phlobatannins, Terpenoids and Flavonoids.

Test for Alkaloid:

3ml of aqueous extract was added to 3ml of 1% HCl on steam bath and stirred. Mayer and Wagner's reagent was then added to extract. Turbidity of the resulting precipitate was marked for the presence of Alkaloid.

Test for Tannins:

3ml of the aqueous extract added to 3ml of distilled water and stirred, then few drops of $FeCl_3$ solution were added. The formation of green colour precipitate was indication of the presence of Tannins.

Test for Saponins:

3ml of aqueous extract was shaken vigorously with equal volume of distilled water in a test tube and warmed. The formation of stable foam was taken as an indication of the presence of Saponins.

Test for Phlobatannins:

3ml of aqueous extract was added to 2ml of 1% HCl and the extract was boiled. Deposition of a red precipitate was taken as evidence for the presence of Phlobatannins.

Test for phenols:

Two (2) ml extract was taken in a test tube and warmed at 45-50°C in a water bath. Then 2 ml of 3% $FeCl_3$ was added. Formation of green or blue colour will indicate the presence of phenols.

Test for Flavonoids

3ml of aqueous extract and 1ml of 10% lead acetate solution was added. The formation of a yellow precipitate was taken as a positive result for Flavonoids.

Test for Terpenoids:

Add 3ml of the organic extract was dissolved in 2ml of chloroform and evaporated to dryness. 2ml of concentrated sulphuric acid was then added and heated for about 2min. Development of greyish colour indicates the presence of Terpenoids.

Test for sterols:

(Salkowski's test) Two (2) ml of concentrated H_2SO_4 was added to 2 ml of extract. A red precipitate indicated steroidal ring.

RESULTS AND DISCUSSION

Alkaloids, saponin, tannin, terpenoids, flavonoids and phlobatannin were found to be present in the preliminary phytochemical screening. The results are presented in table-1. In this study, 14 randomly selected plant species belonging to different

families, used by the Santal and Paharia tribe for the treatment of gynaecological disorders were collected. The basic natural products which occur in plants are Alkaloids, found in the form of salts with organic acids. They are considered to be the most efficient therapeutic agent among plant substances. Purely synthesized alkaloid can be used as medicinal agents because of their analgesic and anti-bacterial properties (Eleazu, *et al.* 2012). Tannins are used as acetylated mannose polymers hence it is used for medicinal purpose. Saponin used as a natural cleansers and cardiac glycosides are used for ulcer and diabetic treatment (Pradeep, *et al.*). Flavonoids are the phytochemical present in plants which possess many useful activities like anti-inflammatory, antibacterial and antioxidant. Terpenoids used as antimicrobial, anti-diarrheal agent (Harborne and Williams, 2014).

Table 1- On preliminary phytochemical screening Alkaloids, saponin, tannin, terpenoids, flavonoids and phlobatannin were found to be present.

Scientific Name	Alkaloid	Tannin	Saponin	Phlobatannins	Falvonoids	Terpenoids
Abutilon indicum (L.) Sweet	1	0	1	0	1	0
Acacia nilotica Willd.	1	0	1	0	1	0
Achyranthes aspera L.	1	0	1	0	1	0
Aegle marmelos (L.) Corrêa	0	0	0	0	1	1
Alstonia scholaris (L.) R.Br.	1	0	1	0	0	1
Asparagus racemosus Willd.	1	1	1	0	0	1
Carica papaya L.	1	0	1	0	1	1
Catharanthus roseus (L.) G.Don	1	1	1	0	1	1
Musa paradisiaca L.	1	1	0	0	0	1
Phyllanthus niruri L.	1	1	1	0	0	1
Ricinus communis L.	0	1	1	1	1	0
Terminalia bellirica (Gaertn.) Roxb.	0	1	1	1	1	1
Trigonella foenum-graecum L.	1	1	1	0	0	0
1=Present, 0=Absent						

CONCLUSION

In the traditional system of medicine, the plants play a very vital role as the traditional medicine practitioners have identified these plants through experience and continuous learning. The plants have secondary metabolites like Alkaloids, Tannin, Saponin, Phlobatannins, Flavonoids, Terpenoids which make medicinally important. The phytochemical screening of these plants could be best sources of potential drug which could improve the health status of women and the society at large. In the Rajmahal Subdivision the rural health centres are merely functional, and the rural women mostly depend on the herbal remedy for every other ailment.

REFERENCES

A. Kocabas. 2017. Ease of Phytochemical extraction and analysis from plants. *Anatolian Journal of Botany.* 1(2): 26-31

A. Pradeep, M. Dinesh, A. Govindraj, D. Vinothkumar & N. G. Ramesh Babu. Phytochemical analysis of some important medicinal plants, *International Journal of Biological & Pharmaceutical Research*.

C. O. Eleazu, K. C. Eleazu, E. Awa and S. C. Chukwuma, 2012. Comparative study of the phytochemical composition of the leaves of five Nigerian medicinal plants, *Journal of Biotechnology and Pharmaceutical Research,* 3(2): 42-46

C. S. Ezeonu, C. M. Ejikeme. 2016. Qualitative and quantitative determination of phytochemical contents of indigenous Nigerian softwoods. *New Journal of Science*. 1-9

G. O. Silva, A. T. Abeysundara, M. M. Aponso. 2017. Extraction methods, qualitative and quantitative techniques for screening of phytochemicals from plants. *American Journal of Essential Oils and Natural Products.* 5(2): 29-32

J. B Harborne and C. A. Williams. 2014. Arylidene Derivatives as Synthons in Heterocyclic Synthesis, *Open Access Library Journal,* May 21 1(2)

L. C. Apsell, I. Hemphil, L. Cobiac, 2006. *Medicinal Journal of Australia*. 185(4): S4-24, PMID 17022438.

M. Francesco, R. Rosa, K. Haroon & M. Nicola. 2015. Medicinal plants with anti-inflammatory activities. *Natural Product Research.* 30:1343-1352

M. Saxena, J. Saxena, R. Nema, D. Singh & A. Gupta. 2013. A phytochemistry of medicinal plants. *Journal of Pharmacognosy and Phyto chemistry.* 1(6): 168-182

O. V. Njoku, C. Obi. 2009. Phytochemical constituents of some selected medicinal plants. *African Journal of Pure and Applied Chemistry.* 3(11): 228-233

P. K. Lai & J. Roy. 2004. *Current Medicinal Chemistry,* 11(11): 1451-1460, PMID 151805777

R. S. Sawant, A. G. Godghate, S. A. Sankpal, S. A. Walaki & S. S. Kankanwadi. 2014. Phyto chemical analysis of bark of *Acacia nilotica, Asian journal of Plant Science and Research.* 4(2):22-24

R. Sheel, K. Nisha, J. Kumar. 2014. Preliminary phytochemical screening of methanolic extract of *Clerodendron infortunatum*. *IOSR Journal of Applied Chemistry.* 7(1): 10-13