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Ethnomedicinal and Phytochemical evaluation of *Achyranthes aspera* L. (Root) which is used to induce labour pain in Ranchi District, Jharkhand

Dolly Promila Bara* & Kunul Kandir
University Department of Botany, Ranchi University, Ranchi, Jharkhand, India

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Abstract- This communication records the ethnomedicinal and phytochemical evaluation of *Achyranthes aspera* L. (Root) which is used to induce labour pain in Ranchi district. The claims were gathered by interviewing traditional healers, especially women of the study area. The particular claim was collected from Angara, Bero and Mandar blocks. The qualitative study of *Achyranthes aspera* L. (Root) reveals that the presence of number of secondary metabolites. Active component of *Achyranthes aspera* (Root) was extracted by shaking method. The powdered sample was soaked with the solvent like methanol, ethanol, Acetone and water. Tannin was present in all extracts.

Key words: *Achyranthes aspera,* Secondary Metabolites, Ethno-medicinal, Labour pain.

INTRODUCTION

Nature is a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources. *Achyranthes aspera* is a perennial herb belonging to the family of Amaranthaceae.[1] It is known as "Prickly chaff flower" in English and "Chirchita", "Onga", "Latjeera", or "Apamarga", in local language.[2] It is known as "Sitirkad" in Mundari, "Karkralatha" in Santhali and "Chirchiti" in Oraon.[3]

It is an erect, annual herb, distributed in the hilly districts of India.[4] The medicinally active plant compounds are usually their secondary metabolites like terpenoids, flavonoids, tannins etc. that are responsible for protecting the plants from microorganisms, insects and other natural pests.

*Corresponding author :
Phone : 9431372070
E-mail : dollypromilabara@gmail.com

MATERIALS & METHODS

A pilot survey of the study area was conducted and a list of well known "traditional birth attendants" (TBA) was prepared. Traditional birth attendants are often older women, respected in their communities. The focus of their work is to assist women during delivery. Thereafter, these informants were visited at least once a month for two years and interviewed to gather medico-botanical folklores. A good number of claims were verified with actual beneficiaries.

Fresh healthy roots are collected from Angara, Bero and Mandar blocks and washed with tap water. The samples are dried under shade for two days after that partially dried roots are dried in hot air oven at 50°C for 24, 24 and 6 hour respectively. The dried plant material was powdered with mixer grinder and stored in air tight polybags for further use. Shaking method is applied for the extraction.

Shaking Method

The powdered sample was soaked with solvent (methanol, ethanol, acetone and water) in (1:10) shaking incubator for 48 hour and filtered through Whatman No.-1 filter paper.[5]

Phytochemical analysis of Root extract by Shaking Method

Extract was tested for the presence of active principles such as terpenoids, steroids, saponins, Alkaloids, Flavonoids and Tannins.

1. **Steroid:** For determination of steroid Liebermann-Burchard test was performed in which extract was mixed with few drops of acetic anhydride, boiled and cooled concentrated sulphuric acid was added from the sides of the test take and observed for the formation of a brown ring at the junction at two layers. Green Coloration of the upper layer and the formation of deep red color in the lower layer would indicate a positive test for steroid.[6]
2. **Tannin:** For the determination of tannin one ml of water and 1-2 drops of ferric chloride solution were added in 0.5 ml of extracted solution. Blue colour was observed for gallic tannins and green black catecholic tannins.[7]
3. **Terpenoid:** For the determination of terpenoid Salkowski test was performed in which five ml of each extract was mixed in 2 ml of chloroform and concentrated H_2SO_4 (3 ml) was carefully added to form a layer. A reddish brown coloration of the interface was formed to show the presence of Terpenoids.[7]
4. **Alkaloid:** For determination of alkaloid Hager's test was performed in which test solution was treated with few drops of Hager's reagent (Saturated picric acid solution). Formation of yellow precipitate would show a positive result for the presence of alkaloid.[8]
5. **Phenol:** For the determination of Phenol Ferric Chloride test was performed in which test extract were treated with 4 drops of Alcoholic Fe Cl_3 Solution. Formation of bluish black colour indicates the presence of phenol.[9]
6. **Flavonoid:** For determination of Flavanoid Lead acetate solution test was performed in which test solution when treated with drops of lead acetate (10%) solution would result in the formation of yellow precipitate.[8]
7. **Saponin:** For determination of saponin test was performed in which test solution was mixed with water and shaken and observed for the formation of froth, which stable for 15 minutes for a positive result.[7]

RESULT & DISCUSSION

Active component of *Achyranthes aspera* was extracted by "Shaking method" and preserved at 4°C for further use. Root extract contain several active components secondary metabolites so the extract was used for different test. However different components shows different solubility with solvents, so extraction was performed by using different solvent of different polarity. Different phytochemical test was performed by each fraction of extract. In which several components are found to be present and some are absent. Test was performed by shaking method and documented in Table no.-1. Here positive sign indicates the presence of phytochemical where as negative sign indicates absent of corresponding phytochemicals. Tannin was present in all extracts. Alkaloid was absent in ethanolic, acetone and water extracts but present in methanolic extract. Steroid, Terpenoid, Phenol and Saponin these metabolites are absent in all extracts.

Table 1- Qualitative phytochemical test of extract of Root of *Achyranthes aspera* by shaking method

Different Phytochemicals	Control	Methanol	Ethanol	Acetone	Water
Steroid	-	-	-	-	-
Tannin	-	+	+	+	+
Terpenoid	-	-	-	-	-
Alkaloid	-	+	-	-	-
Phenol	-	-	-	-	-
Flavonoid	-	-	-	-	-
Saponin	-	-	-	-	-

CONCLUSION

Achyranthes aspera (Root) is widely used by traditional birth attenders. The paste of the roots is applied to external genitalia to induce labor pains.[10] *Achyranthes aspera* is used in gynecological disorders by ethnic people.[11,12] The qualitative study of *Achyranthes aspera* (Root) reveals that the presence of tannin and alkaloids. Now a day, plant materials continue to play a major role in primary health care as therapeutic remedies in developing countries. It also shows the better alternative source of pharmacologic agent.

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