Phytochemical Study of *Aphanamixis Polystachya* Wall. Root Bark Extract in various Solvents

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Abstract:

In this present study photochemistry of dried root bark of *Aphanamixis polystachya* Wall has been done. The trial drug extract in various solvent such as water, PET ether, ethyl acetate, ethyl alcohol, methyl alcohol, chloroform in soxhlet apparatus were used for phytochemical investigation. As end result the different phyto-constituents obtained in extracts of various solvent are phenyl compounds, coumarins, fat and essential oils, terpenoids, monoterpenoids, diterpenoids, triterpenoids, steroids, alkaloids etc.

Key Words: *Aphanamixis polystachya* Wall., Phytochemistry, phyto- constituents.

Introduction:

Different medical plants have been used for years in daily life to treat disease all over the world. Plants play a vital role in human and animal life as source of food and medicine .*Aphanamixis polystachya* shows many therapeutic properties as cardiotonic and chloretic activity[(1)], antioxidant[(2)] *Amoora rohituka* is described in Ayurveda, an Indian traditional system of medicine for management of disorders of blood, diseases of eye, helminthiasis disease, ulcer, liver disorders and splenomegaly. Researchers studied that many medicinal plants posses significant hepatoprotective activity[(3)]. The fruit, bark and leaves extracts and of *Aphanamixis polystachya* possess significant cytotoxic and antioxidant activity, thrombolytic, antimicrobial activity[(4,5)]. Limonoids from *Aphanamixis polystachya* shows Antifeedant Activity[(6)].

Aphanamixis polystachya pacifies vitiated vata, and pitta, splenomegaly, liver disorders, tumor, ulcer, dyspepsia, intestinal worms, skin diseases, diabetes, eye diseases, jaundice, hemorrhoids, burning sensation, rheumatoid arthritis and leucorrhoea[(7)]. The extract of stem bark, leaves and leaf derived callus of *Amoora rohituka* in various solvent were examined against 10 species of human pathogenic bacteria[(8)]. Researcher evaluate *in vitro* antibacterial activity, cytotoxic activity and *in vivo* anti- diarrheal activity of ethanolic extract of *Aphanamixis polystachya*(wall.) parker leaf and concluded that Leaf extract of *Aphanamixis polystachya* (wall.) Parker to be a good source of antimicrobial and cytotoxic property[(9)]. The study is done on characterization and fatty acid composition of *Amoora rohituka* Seed and Leaf Oils and concluded that both seed and leaf oils of *Amoora rohituka* are rich in essential fatty acids and consequently the oils especially the seed oil may prove its worth as edible oil if considered from nutritional point of view[(10)]. The extracts of *Amoora rohituka* leaf were tested against the red flour beetle and investigate the biological activity such as dose-mortality, insect repellency, cytotoxicity, larvicidal and antimicrobial assays[(11)]. Researcher investigate the crude n-hexane, ethyl acetate and methanol extracts of Aphanamixis polystachya leaves for their antimicrobial, antioxidant, cytotoxic and thrombolytic activities[(12)].

After review of literature the detail study of phytochemical studies of *Aphanamixis polystachya* Wall. root bark under identical set of experimental condition is still lacking. It was thought of interest to study the phyto-constituents present in *Aphanamixis polystachya* Wall. Root bark under suitable condition.

Aim:

To study phytochemicals or phyto-constituents present in *Aphanamixis polystachya* wall. root bark extract in various solvents.

Materials:

Aphanamixis polystachya root bark was collected from the garden of College of Ayurved and Research Centre, Nigdi, Pune (India) in the month of April 2019 at morning time. Chloroform, Ethanol, Ethyl acetate, n-Hexane, Methanol, Petroleum ether are used as solvants for extraction. Mayer reagent, Wagner"s reagent, Hager"s reagent, Dragendroff"s reagent, Lead acetate, Ferric chloride, Potassium dichromate, Sodium hydroxide, Sodium chloride, gelatin solution, Ammonia solution, Zinc chloride, Hydrochloric acid, Glacial acetic acid, Molisch"s reagent, copper acetate, Glacial acetic acid, Cobalt chloride, Benedict"s reagent, Fehling solution A and B, Ninhydrin, Million"s reagent, Sodium nitroprusside, Sulphuric acid, Nitric acid, Iodine, Safranine, picric acid, potassium hydroxide, Ammonium hydroxide, benzene, pyridine, gallic acid, All the chemicals were used of AR grade (Sd fine chemicals Pvt Ltd., Mimbai).

Preparation of extracts:

The air-dried root bark of *aphanamixis polystachya* (wall) *parker* was shade dried and powdered at room temperature. 10g of powder was subjected to successive hot continuous extraction (soxhlet) in various solvents.

Methods:

Collection of root-bark of *Aphanamixis polystachya* is collected from matured and well developed tree. Bark of perennial root is collected in early spring (March). Collected material is washed thoroughly and dried[13].

The phytochemical investigation were done by using known methods[14-20].

Observations and Results:

Table No. 1: Phytochemical screening of *Aphanamixis polystachya* root bark in various solvent.

Phytochemicals	Water	PETether	Ethyl acetate	Methyl alcohol	chloroform	Ethyl alcohol
Alkaloids	+	+	+	+	+	+
Phenolic compound	-	-	-	-	-	+
Flavonoides	+	-	+	+	-	+
Carbohydrates	-	-	+	+	-	+
Reducing sugar	+	-	+	+	-	+
Amino acid	-	-	-	-	-	-
Phytosterol	+	-	+	+	-	+
Protein	-	-	-	+	-	-
Gum and mucilage	-	-	-	-	-	-
Anthocyanin	-	-	-	+	-	+
Glycoside	-	-	-	+	-	-
Saponin	+	+	+	-	+	-
Coumarin	-	-	+	+	-	+
Emodine	-	-	-	-	-	-
Adonine	-	-	-	-	-	-
Diterpines	+	-	+	-	-	+
Cardiac glycoside	-	-	+	+	-	+
Tannin	-	-	-	+	+	-

The result of phytochemical screening of aphanamixis polystachya in various solvents shows in table. Extract of water shows presence of alkaloids, flavonoids, reducing sugar, phytosterols, diterpines and saponin. Extract of PET ether shows presence of alkaloids and saponins. Extract of ethyl acetate shows presence of alkaloids, flavonoides, carbohydrates, reducing sugar, phytosterol, saponin, coumarin, diterpines, and cardiac glycoside. Extract of methyl alcohol shows presence of alkaloids, flavonoides, carbohydrates, reducing sugar, phytosterol, protein, anthocynin, glucoside, saponin, cardiac glycoside and tannin. Extract of chloroform shows presence of alkaloids, glycoside and tannins. Extract of ethyl alcohol shows presence of alkaloides, phenolic compound, flavonoides, carbohydrates, reducing sugar, phytosterol, anthocyanin, coumarin, diterpins and cardiac glycoside.

Discussion:

Phytochemical analysis is very important to rule out adulteration in the herbal formulations. Eg. Root bark of Rohitaka is useful in treatment but due to non-availability the use of stem bark is regular in routine practice. There are several species available in different floras and in market trade. Root bark of *Aphanamixis polystachya* contains phyto-constituents such as alkaloids, flavonoids, reducing sugar, phytosterols, carbohydrates, diterpines and saponin. Alkaloids shows analgesic activity, which is homologous to Vataghna activity which is useful in conditions like arthritis. Terpenoids have medicinal properties as analgesic and antiseptic which is same as Vataghna and Vranashoshana activity respectively. These activities are useful for treating septic wound. Cardiac glycosides shows cardio-tonic activity which is same as Hridya acrivity which can be used in heart

disease. This study can be further continued for finger printing of phyto-constituents present in *Aphanamixis polystachya*.

Future Scope-

Comparative phytochemical study if root-bark and stem-bark of *Aphanamixis polystachya* can be done in fiture.

Conclusion:

This study can be concluded as the phyto- chemical analysis in various solvants of root bark of *Aphanamixis polystachya* shows the presence of Alkaloids, Flavonoids, Phytosterols, Caumarine, Diterpines, Cardiac Glycosides.

Source of Support: Nil

Conflict of Interest: Nil

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