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Phytochemical analysis of siddha drug formulation Poonaga Mezhugu

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Abstract

Siddha medicine including mostly plants which plays an important role in medicinal properties for both preventive and curative. These medicinal values of plants are in some chemically active substance they produce a definite physiological action on the human body. Poonaga mezhugu is a classical Siddha medicine used in the treatment of Oligospermia, impotence, premature ejaculation and nervous weakness.

Aim: The aim of the present study is phytochemical analysis of the Siddha drug formulation of poonaga mezhugu.

Method: The extract was prepared with poonaga mezhugu drug was to being photochemical screening test for carbohydrate, glycosides, steroids, tannins, saponins, alkaloids, flavonoids, proteins, phenols and terpenoids.

Results and discussion:

The qualitative analysis of phytochemical screening of siddha drug poonaga mezhugu shows the presence carbohydrate, saponin and terpenoids. The quantitative analysis of poonaga mezhugu contains carbohydrate, saponin and terpenoids respectively in 91, 10 and 78 mcg/100gm.

Conclusion: The phytochemical screening study for Poonaga mezhugu shows the presence of carbohydrate, saponin and terpenoids which responsible for its biological activity. This evidence based data provide valuable information is helpful to standardization of poonaga mezhugu.

Keywords: Poonaga mezhugu, phytochemical, Standardization, siddha, carbohydrate, saponin, terpenoids.

Introduction

Siddha medicine including mostly plants which plays an important role in medicinal properties for both preventive and curative. Medicinal plants are richest bio resource of drugs in traditional system of medicine and its phytochemical is responsible for different colours, flavours and smells of plant. They also involving in treatment for many disease. These medicinal values of plants are in some chemically active substance they produce a definite physiological action on the human body. Poonaga mezhugu is a classical Siddha medicine used in the treatment of Oligospermia, impotence, premature ejaculation and nervous weakness. This treatment is due to the phytochemical contains in the siddha drug preparation poonaga mezhugu. Phytochemical screening is very important in identifying new sources of therapeutically and industrially important compounds like carbohydrate, glycosides, steroids, tannins, saponins, alkaloids, flavonoids, proteins, phenols and terpenoids etc. The present study is to find the phytochemical constituents present in poonaga mezhugu.

Materials and Methods

Selection of drug:

Poonaga Mezhugu mentioned in Anuboga vaidhya navaneetham (Part – 8, Pg. No. 128, Second Edition - 2002, Hakim P. Mohamed Abdulla Sahib) was selected for evaluating the phytochemical analysis.

Ingredients of poonaga mezhugu:

Poonagam (*Lumbricus terrrestris*),
Saathikai (*Myristica fragrans*),
Saathipathri (*Myristica fragrans*),
Mulangivithai (*Raphanus sativus*),
Agiragaram (*Anacyclus pyrethrum*)

Phytochemical screening:

Extract Preparation:

100gm of powdered medicine was measured into a conical flask and 200ml of solvent such as acetone, methanol, benzene and water respectively were added and it is packed into soxhelt extractor, for 48hrs and labelled. Finally the extract was filtered with Watt man No.1 filter paper and the filtrate obtained was stored in airtight bottles. However, the extract was evaporated to dryness by heating in water bath to obtain semi solid mass. Dried extract was stored in refrigerator at 4°C for their future use in phytochemical analysis.

Qualitative Analysis of Poonaga Mezhugu:

Test for Carbohydrates (Benedict's test):

To 0.5 ml of test drug about 0.5 ml of Benedict's reagent is added. The mixture is heated on a boiling water bath for 2 minutes. A characteristic coloured precipitate indicates the presence of sugar.

Test for Glycosides (Keller-KillianiTest):

To 2 ml of the extract, glacial acetic acid, one drop 5% $FeCl_3$ and conc. H_2SO_4 was added. Reddish brown colour appeared at junction of two liquid layers and upper layer turned bluish green indicating the presence of glycosides.

Test for Steroids (SalkowskiTest):

To 2 ml of extract, 2 ml of chloroform and 2 ml of conc. H_2SO_4 was added. The solution was shaken well. As a result chloroform layer turned red and acid layer showed greenish yellow fluorescence.

Test for Alkaloids (Mayer's Test):

The extract was evaporated in a test tube. To the residue dilute HCL was added, shaken well and filtered. To the 2-3 ml of filtrate Mayer's reagent was added. Formation of yellow precipitate showed the presence of alkaloids.

Test for Flavonoids (ShinodaTest):

To the extract, 5 ml of 95% ethanol and few drops of concentrated hydrochloric acid was added. To this solution 0.5 gm of magnesium turnings were added. Pink colouration indicated the presence of flavonoids.

Test for Tannins (Lead Acetate Test):

On addition of lead acetate solution to the extract white precipitate appeared.

Test for Saponin (Foam Test):

Drug extract was shaken vigorously with water. No persistent foam was formed.

Test for Protein (Biuret test):

With 3 ml of test solution, few drops of 4% NaOH and 1% CuSO4 solution were added. The tubes were observed for violet or pink colour formation.

Test for Phenol (Ferric chloride test):

The extract was diluted to 5 ml with distilled water. To that a few drop of neutral 5% ferric chloride solution was added. A dark green color indicates the presences of phenolic compounds.

Test for Terpenoids:

To the test solution 2ml chloroform was added with few drops of conc. Sulphuric acid (3ml) at the side of the test tube. An interface with a reddish brown coloration is formed if terpenoids constituent is present.

Quantitative Analysis of Poonaga Mezhugu:

Quantitative Estimation of Carbohydrate

The total sugar content was estimated by Anthrone method (Roe, 1955). A known amount of the sample was taken, ground well with 80% ethanol and was centrifuged at 4000 rpm. From the supernatant, 0.5 ml was taken and 5 ml of anthrone reagent was added. The tubes were kept in a boiling water bath for 15 min. After that, they were kept in a dark room for another 15 minutes. The colour intensity developed was read in a spectrophotometer at 650 nm.

Quantitative Estimation of Terpenoid:

Total terpenoid content was determined by the method of Ghorai et al (2012)17. To 1 mL of the plant extract, 3 mL of chloroform was added. The sample mixture was thoroughly vortexed and left for 3 min and then 200 µl of concentrated sulfuric acid (H2SO4) was added. Then it was incubated at room temperature for 1.5h-2h in dark condition and during incubation a reddish brown precipitate was formed. Then carefully and gently, all supernatant of reaction mixture was decanted without disturbing the precipitation. 3 mL of 95% (v/v) methanol was added vortexed thoroughly until all the precipitation dissolve in methanol completely. The absorbance was read at 538 nm using UV/visible spectrophotometer. The total terpenoid content was calculated by calibration curve of Linalool and the results were expressed as Linalool equivalent (mg/g).

Quantitative Estimation of Saponins:

Methanolic and water extract was dissolved in 80% methanol, 2ml of Vanilin in ethanol was added, mixed well and the 2ml of 72% sulphuric acid solution was added, mixed well and heated on a water bath at 600c for 10min, absorbance was measured at 544nm against reagent blank. Diosgeninis used as a standard material and compared the assay with Diosgenin equivalents.

Results

Table-1:Qualitative result

Test name	Poonaga mezhugu
Carbohydrate	Present
Protein	Absent
Alkaloid	Absent
Flavanoid	Absent
Glycoside	Absent
Steroid	Absent
Saponin	Present
Phenol	Absent
Tannin	Absent
Terpenoid	Present

Table-2: Quantitative result

Poonaga Mezhugu	Result mcg / gram
Carbohydrate	91
Terpenoid	78
Saponin	10

Discussion

The extract was prepared with poonaga mezhugu drug was to being photochemical screening test for carbohydrate, glycosides, steroids, tannins, saponins, alkaloids, flavonoids, proteins, phenols and terpenoids. Thequalitativeanalysisofphytochemicalscreeningofsiddhadrugpoonagamezhugushowsthepresencecarbohydrate, saponin and terpenoids. The quantitative analysis of poonaga mezhugu contains carbohydrate, saponin and terpenoids respectively in 91, 10, 78 mcg/100gm.

Conclusion

The qualitative analysis of phytochemical screening of siddha drug poonaga mezhugu shows the presence carbohydrate, saponin and terpenoids. The quantitative analysis of poonaga mezhugu contains carbohydrate, saponin and terpenoids respectively in 91, 10, 78 mcg/100gm.Carbohydrate, saponin and terpenoids are responsible for its biological activity. This evidence based data provide valuable information is helpful to standardization of poonaga mezhugu.

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