

PHYTOCHEMICAL ANALYSIS OF AYUSH DRUG DATURA METAL SEEDS

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Abstract

Siddha system of medicine is the most primitive medical system. Siddha drugs are natural product obtained from herbs, metal, mineral and animal kingdom. With the growing awareness of health care and safety aspects. Contemporary common man moves towards herbal products for common physical disorders. Proper standardization of drug preparation method as well as chemical analysis of traditional formulation is mandatory to gain support for its use worldwide.¹Primarily this plant is used as an intoxicant and hallucinogen^{2,3} The leaves and seeds of Datura species rich in alkaloids, including atropine, scopolamine and hyoscyamine.⁴Phytochemical are chemical compounds present in the by plants. It is refers to the extraction, screening and identification of the medicinally active substance found in the plants. The phytoconstituent such as flavonoids, phenols, tannins, saponins, aminoacids and sterols and found in Datura metal. This seeds are identified by botanical authentication. The present study is carried out to different extract in Datura metal seeds by PHYTOCHEMICAL ANALYSIS.

Key words-Datura metal, Phytochemical study, Karuumaththai seeds, Poisonous plant, Siddha Drug

I. INTRODUCTION

Datura metal is a medicinal herb. The name of the Datura comes from Sanscrit Dustra or Dhastura.⁵Datura metal is a flowering plant and grows upto 3 feet height. Subshrubby; branched purplish, glabrescent. Leave elliptical to angulate, to 16 *12 cm, sub coriaceous, base unequally truncate, margin often lobed, apex acute; petiole to 8 cm. Calyx tubulae, 8 cm; lobes 5, lance late, 1.5 cm. Corolla trumpet- shaped, purplish, 7 cm wide; tube to 12 cm; lobes 5, acuminate. Stamens 5, inserted about the middle of the tube, decurrent bellow, included; filaments filiform, 8 cm; another's 1 cm. dehiscence longitudinal. Ovary cornical, echinate, 2- lobed; ovules, on 2- furcate placentae; style 10cm. capsule globose, 4 cm inside, dehiscence irregular; Spines stout, 0.7 cm, blunt; calyx base persistent, epicarp thick; seed, circular, compressed, rugose.⁶

Especially in India, it is used for the treatment of epilepsy, hysteria, heart attack, cough, convulsion, diarrhea, skin diseases, etc.^{7,8}Datura metal also been used for its anaesthetic or pain killing properties. Several scientific studies have been reported on antioxidant and phytochemical screening of ethanol and chloroform crude extract.⁹This study investigate the phytochemical composites different types of solvent Chloroform and ethanol.

I. MATERIALS AND METHODS

1. Collection of seeds

The seeds were collected from the field of reserved forest of Kuttalam hills area. The collected seeds separated by removing the unwanted materials. After drying seeds were shade dried for several days. It preserve in the air tight container.

2. Identification and Authentication

The drug is identified and authenticated by Dr.P.Ratha, Ph.D. Research Officer (Botany), Siddha Clinical Research Unit, CCRS. Palayamkottai, Thirunelvely. (voucher no - D110219001M)

3. Extract preparation

Extraction procedure is done according to the method of universal. Extract were prepared by using for solvents Chloroform and Ethanol.

4. Preliminary Phytochemical evaluation

The phytochemical tests are done for analyzing different chemical groups present in the extract.

4.1. Test for Terpenoids

Noller's test: Warmed a substance with tin bit and thionyl chloride. A magenta colour indicates the presence of triterpenoids

4.2. Test for phenols

To the substance in alcohol add alcoholic ferric chloride solution. A bluish green or red colour indicates the presence of phenols.

4.3. Test for flavones

- a. **Shinado's test:** To the substance in alcohol, a few magnesium turnings and few drops of conc. HCl and boil over a water bath for two minutes. Magenta colour colouration indicates the presence of flavones
- b. To the substance in alcohol add 10 percent NaOH or NH_3 , dark yellow colour indicates the presence of flavones.

4.4. Test for Steroids

Liebermann Burchard test : Dissolved the substance in a few drops of chloroform, 1 ml of acetic acid anhydride and 1ml of glacial acetic acid, warm and cool under tap, and add few drops of conc H_2SO_4 along the sides of the test tube. An appearance of blue green colour indicates the presence of steroids.

4.5. Test for quinones

To the test substance, add NaOH. A red colour indicates the presence of quinones.

4.6. Test for Anthraquinones

Borntager's test: To the substances aqueous ammonia or caustic soda is added. A pink colour in the aqueous layer after shaking indicates the presence of anthraquinones.

4.7. Test for Glycosides

Substance is mixed with a little anthrone on a watch glass, then add one drop of conc. H_2SO_4 and make into a paste and warm gently over a water bath. A dark green colouration indicates the presence of glycosides.

4.8. Test for Acids

Substance is shake with dil. sodium bicarbonate. Effervescence indicates the presence of acid.

4.9. Preparation of Reagent for the Detection of Alkaloids

Dragendroff's reagent: It gives an orange red precipitate with a solution of an alkaloid in 1% sulphuric acid. The Dragendroff's reagent can also be used as spray reagent for detecting the presence of alkaloids on paper and thin layer chromatogram. The alkaloid can be recovered from the perceptible by treatment with sodium carbonate and subsequent extraction with ether.

Mayer's reagent method: This reagent which gives a white or pale yellow precipitate with a solution of an alkaloid in prepared as follows. A solution of mercuric chloride (2.72g) in distilled water (120 ml) is mixed

with a solution of potassium iodide (10g) in distilled water (40ml) and the mixture made up to 200ml with the addition of distilled water.

Wagner's reagent methods: Wagner's reagent is prepared by dissolving sublimed iodine (1.27g) and potassium iodide (2g) in water (20ml) and making the solution up to 100ml with water. With an acidic solution of an alkaloid, this reagent gives a brown perceptible.

4.10. Test for Coumarins

Substances is treated with alcoholic KOH or NaOH. Dark yellow colour shows the presence of coumarins.

4.11. Test for Tanins

Treat the substance in alcohol or water with lead acetate solution, a bulky precipitate shows the presence of Tannins.

4.12. Test for Lignans

Treat the substance in alcohol or water with phloroglucinol and con. HCL, red to pink colour shows the presence of Lignans.

4.13. Test for Chalcones

Treat the substance in alcohol with antimony trichloride in CHCl₃, heat the mixture till red colour develop.

4.14. Test for Furanoids.

Substances is treat in the alcohol with paradimthy amino benzaldehyde and conc.HCL. Heat the mixture till red colour develops.

4.15. Test for Amino acids

Substance is treat in alcohol or water with ninhydrin in alcohol. Blue to pink colour indicates amino acids.

II. Physico - chemical analysis of Datura metal seeds- Organoleptic evaluation

| | |
|----------|---|
| ➤ Colour | Dark or yellowish brown |
| ➤ Odour | Odourless |
| ➤ Shape | Kidney shape |
| ➤ Margin | Laterally compressed and double edge at the convex border |
| ➤ Taste | Bitter |

III. PRELIMINARY PHYTOCHEMICAL SCREEING

Preliminary phytochemical analysis were done .The results of the analysis were illustrated in table 1

Table 1 : Preliminary phytochemical screening of Datura metal seeds

| S.No. | Test | Datura metal extract | |
|-------|--------------------|----------------------|---------|
| | | Chloroform | Ethanol |
| 1 | Terpenoids | +ve | +ve |
| 2 | Phenolic Compounds | -ve | +ve |
| 3 | Flavonoids | -ve | +ve |
| 4 | Steroids | -ve | -ve |
| 5 | Quinones | -ve | -ve |
| 6 | Anthraquinones | -ve | -ve |
| 7 | Glycosides | +ve | +ve |
| 8 | Acids | -ve | -ve |
| 9 | Alkaloids | +ve | +ve |
| 10 | Coumarin | +ve | +ve |
| 11 | Tannins | -ve | +ve |
| 12 | Lignanas | -ve | -ve |
| 13 | Amino acids | -ve | +ve |
| 14 | Saponins | -ve | +ve |
| 15 | Fixed oil | +ve | +ve |
| 16 | Protein | +ve | +ve |

+ve = Present

-ve = Absent

V. FINDINGS AND DISCUSSION

- ✓ Phytochemical screening result shows the Terpenoids, Glycosides, Alkaloids, Coumarin. Fixed oil. Protein were present in bothseeds extracts of Datura metal.
- ✓ Whereas Steroids, Quinones, Anthraquinones, Acids, Lignanasabsence in all the extract.
- ✓ Chloroform extract ofDatura metal Phenolic Compounds, Flavonoids, Steroids, Quinones, Acids, Tannins, Lignanas,Amino acids and saponines are absent in the extract.
- ✓ Ethanol extract of Datura metal seeds are present in Terpinoids,Phenolic Compounds, Flavonoids, Glycosides,Alkaloids,Coumarin, Tannins, Amino acids, Saponins, fixed oil and protein.
- ✓ Phytochemical constituent though are present in plant sample are known to be biologically active compounds and they are responsible for different activities such as antimicrobial, antioxidant, antifungal, anticancer and antidiabetic¹⁰
- ✓ Different phytochemicals have been found to posses a wide variety of pharmacological activities, which may help in protection against chronic disease. Tannins, glycosides, saponins, flavonoids, and aminoacids have hypoglycemic and anti inflammatory activities. Terpenoids and steroids shows analgesic properties and central nervous system activities.

Saponins are involved in plant defense system because of their antimicrobial activity.

- ✓ Coumarin is contain anti inflammatory activities.
- ✓ The most effective bio active compounds are alkaloids, amini acids, and saponins, these were found in all two types of crude extract. Ethanol extract shows the presence of majority phytoconstituent.
- ✓ Many reports are available on flavonoids groups which exhibiting high potential biological activities such as antioxidant, anti inflammatory, antiallergic reactions. ¹¹

VI. SUMMATION

Siddha is a traditional healing holistic medicine of India which emphasizes the maintenance of a relaxed mind and body harmony and insides to keep pack with the laws of nature. In Siddha system, besides herbs, metal and mineral drugs were also used as medicine. Among these herbs are mostly used. According to an estimate of the WHO, above 80% of the world population still uses herbs and other traditional medicine for their primary health care needs.

Pytochemical screening is refers to the extraction, screening and identification of the medicinally active substances found in plant. The extract of Datura metal show the presence of secondary metabolites such as Terpenoids, Glycosides, Alkaloids, Coumarin. Fixed oil. Protein, Phenolic Compounds, Flavonoids, Tannins, Amino acids and Saponins. Datura metal serve as good phytotherapeutic agent.

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