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PHYSICOCHEMICAL AND PHYTOCHEMICAL EVALUATION OF GOLDAN ERECTA (DURANTA)

***Nikita A. Pendharkar[1], Dr. H. Padmalatha[2]**

[1]Department of Pharmaceutical Sciences, JJT University, Jhunjhunu, Chudela 333001 Rajasthan, India.

[2]Department of Pharmaceutical Sciences, Gyana Jyothi College of Pharmacy, Gyana Jyothi nagar, Uppal bus depot, Hyderabad, India.

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***Correspondence for Author:**
Nikita A. Pendharkar
Department of Pharmaceutical Sciences, JJT University, Jhunjhunu, Chudela 333001 Rajasthan, India.
nikita.pendharkar@rediffmail.com.

ABSTRACT

The given present study was aimed to for the development of physicochemical parameters of Goldan Erecta (Duranta), traditionally known as Goldan dew drop belonging to family Verbenaceae. Study comprises physico-chemical, phytochemical evaluation to study and evaluate the purity and authantificity of Goldan Duranta repens L, by using standard methods. To study the phytochemical constituents, the leaves were extracted by pet ether, chloroform and methanol solvents. The result revels that the presence of carbohydrates, alkaloids, steroids, saponins, flavonoids, cardiac glycosides, in the different extract of D. repens L. In this study it was planed to present work on plant to highlight the main potential of this plant.

Keywords: Goldan Dew Drop, D. repens, Goldan Erecta, extractive values, ash values.

INTRODUCTION

Durenta repens linn(synonym: Durenta repens L, Durenta ellisia Jacq, Duranta plumier Jacq, Durenta erecta Linn) belonging to family Verbenaceae is commonly known as Duranta (Tag), Goldan dew drop (Eng), Goldan eardrops (Engl), Pigion berry locally called 'Kata mehedi'[1]. It is an upright to dropping shrub that sometime takes the form of a scrambling shrub or rarely a small tree. The bark is light gray. Light green opposite leaves are ellipyic to ovate and 1.5 to 8cm long[2]. Light blue, lavender or white tubular. Five lodes flowers are bone on terminal or axillary racemes. The yellow or yellow orange fleshy fruitsbare ellipsoidal

with five lobes and grow in hanging clusters with 7.8mm long . The plant mostly found in native of tropical America to Argentina. The flowers of plants attracts butterflies and hummingbirds. Ethyl acetate and aqueous extract of leaves showed significant antimalerial activity when administered to mice[3,4].

MATERIAL AND METHOD

Plant Collection: The leaves of *Durenta repens* were collected from campus of Vijaya College Of Pharmacy, in Hyderabad and authantified from National Bureau of plant Genetic Resources Regional Station, Hyderabad under the Principal scientist Dr. N. Sivaraj and were air dried until free from moisture. Then they were subjected to size reduction to get coarse powder of desired particle size.

Phytochemical Evaluation:

Phytochemical screening was performed using standard procedures [5,6,]

a) Moisture Content

An accurately weighed 5g shade dried leaves powder of D.repens was taken in a tarred glass bottle. The crude drug was heated at 105^0C in an oven till a constant weight, % moisture content of the sample was calculated with reference to the shade dried material.

b) Ash Values

(i) Determination of total ash

Weighed accurately 3g leaves powder of D. repens was added in crucible at a temperature 500-600^0C in a muffle furnace till carbon free ash was obtained. It was calculated with reference to the air dried drug.

(ii) Determination of acid insoluble ash

Ash above obtained, was boiled for 5min with 25ml of 1M Hydrochloric acid and filtered using an ash less filter paper. Insoluble matter retained on filter paper was washed with hot water and filter paper was burnt to a constant weight in a muffler furnace. The percentage of acid insoluble as was calculated with reference to the air dried powdered drug.

(iii)Determination of water soluble ash

Total ash 1g was boiled for 5min with 25ml water and insoluble matter collected on an ash less filter paper was washed with hot water and ignited for 15min at a temperature not exceeding 450^0C in a muffle furnace. Difference in weight of ash and weight of water

insoluble matter gave the weight of water soluble ash. The percentage of water-soluble ash was calculated with reference to the air dried powdered drug.

Table 1: Physico-chemical parameters for Goldan Duranta leaves

Sr. no	Parameters	Results
1	Moisture content	3.106
2	Ash Values	
a	Total ash value	2.56
b	Acid insoluble ash	1.98
c	Water soluble ash	0.7

Extraction of powdered leaves with different solvents

Extracts were prepared with various solvents like methanol, chloroform, pet ether and ethyl acetate by using sohxalate apparatus. Percentage yield of extract obtained were reported in Table 01.

Table 2: Extraction of Goldan Duranta linn leaf with different solvents

Extracts (based on type of solvent used)	**%w/w**
Methanol	10.6
Chloroform	4
Pet Ether	13.2
Ethyl acetate	3.7

Phytochemical evaluation

D. repens roots were qualitatively analysed for the presence of major phytochemical constituents using the standard procedure[7,8]

A) Test for carbohydrates

(i) Molisch's test

To 2-3ml of extract solution, add conc. H_2SO_4 from sides of the tube. Violate ring at the junction of two liquids indicate presence of carbohydrates

(ii) Test for reducing sugars

(a) **Fehling's test**: Mix 1ml Fehling's A and 1ml Fehling's B solution, boil for one minute. Add equal volume of test solution. Heat in boiling water bath for 5-10min. First a yellow and then brick red colour appeared confirmed reducing sugar

B) Test for amino acids and proteins

Aliquot of extracts solution was tested for following test

(i) Biuret test (General test)

To 3ml test solution and add 4% NaOH and few drops of 1% $CuSO_4$ solution distinct violet colouration indicates presence of proteins.

(ii) Millon's test (for proteins)

To 3ml of test solution add 5ml Millio's reagent. After heating cool it add few drops of $NaNO_3$ solution. Formation white precipitate turning to red upon heating indicates presence of proteins and amino acids.

(iii)Ninhydrin test

A liquol of extract solution add 3 drops of 5% Ninhydrin solution in boiling water bath for 10 min. Purple or bluish color appers indicates the presence of amino acids.

(C) Test for steroids

(i) Sakowski reaction

To the sample add 2ml chloroform and 2ml conc. H_2SO_4 shake well. Layer shows greenish yellow fluorescence indicates the presence of steroids.

(D) Test for Cardiac Glycosides

To the extracts sample add 1ml pyridine and iml sodium nitroprusside. Pink to red color appears.

(E) Test for saponins

(i) Froth test

Shake the drug extract or dry powder vigorously with water if persistant foam observed, saponins are confirmed.

(F) Test for flavonoids

To the extract add 5ml ethanol, few drops conc.HCl and 0.5g magnesium turning obtained pink color, flavonoids confirmed.

(G) Test for Alkaloids

To the extract add 15ml 2N H_2SO_4 and filter then make the extract solution alkaline, extract

with chloroform, evaporate and treat the residue with dragendroff's reagent, formation of orange color confirm presence of alkaloids.

(H) Test for terpenoids

To 2ml of extract add 2ml chloroform and concentrated H2SO4, shake well. Chloroform layer showing red color while acid layer appearing fluorescence confirm presence of terpenoids.

(I) Test for tannins

To 2ml extract add 10% solution of lead acetate. Precipitation if obtained indicates presence of tannins.

Table 3: Preliminary Phytochemical Investigation

Phytochemicals	Pet ether	Methanol	Chloroform	Ethyl Acetate
Alkaloids	+	+	+	+
Glycosides	+	+	+	+
Saponins	-	-	-	-
Flavonoids				
Tannins	-	-	-	-
Cardiac Glycosides	-	-	-	-
Proteins and amino acids	-	-	-	-
Carbohydrates	+	+	+	+
Reducing Sugars	+	+	+	+
Resins	+	+	+	+
Terpenoids	+	+	+	+

(+)=Present, (-)=Absent

RESULT AND DISCUSSION

From the last two decades of the century the scientists are hardly trying to evaluate many plant drugs used in traditional system of medicine. Goldan Duranta was subjected to systematic physiochemical and phytochemical screening by extracting with various organic solvents to determine the amount of soluble constituents in a given amount of medicinal plant material. In this study, the physicochemical constants such as moisture content (3.1%), ash

values included total ash value(2.56%), acid insoluble ash (1.98%), water soluble ash (0.7%) were determined as mention in (table 1). The main purpose of reducing drug to its ash form is to remove all traces of organic matter where as ash value useful for evaluation of low grade products. The phytochemical studies was confirmed the presence of phytochemical constituent mentioned in table no.3.

CONCLUSION

In the present study, it was planned to present work on plant drug to highlight the main potential of this plant. So from Vedic period, India has use medicinal plants for various periods. D .repens results indicate the presence of different phytoconstituent mentioned in table no. 03.

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