

**STUDIES ON QUALITATIVE AND QUANTITATIVE  
PHYTOCHEMICAL ANALYSIS OF *ERANDA MOOLA (RICINUS  
COMMUNIS LINN.)***

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Article Received on  
21 April 2019,

Revised on 11 May 2019,  
Accepted on 01 June 2019,

DOI: 10.20959/wjpr20197-15284

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**ABSTRACT**

Ayurveda has many unique to well maintain health and cure the disease condition like herbs preparations. The *Dravya* should be collected according to the principal or procedures laid down in Ayurveda. In the recent years plant research has increased throughout the world and a huge amount of evidence have been collected to show immense potential of medicinal plants used in various traditional system, thus in the present investigation the phytochemical analysis of *Ricinus communis* Linn. was carried out as these plants have been proved to be one of the important medicine for treatment of *Vatahara* properties. According Ayurveda and modern science the plant

quantitative, qualitative and phytochemical analysis are affected by the climate, rainfall, temperature, altitude, method of cultivation, duration of day light, collection of wild area, effect of lunar cycle and soil conditions. HPTLC, qualitative and quantitative analysis like detection of flavonoids, alkaloids etc. were done as per pharmacopoeial standards and the results were documented.

**KEYWORDS:** Qualitative, Quantitative, Collection of the drug.

**INTRODUCTION**

*Eranda* (*Ricinus communis* Linn.), of Euphorbiaceae family is an important drug mentioned in ayurvedic classics from Vedic period it is used very commonly in *Vrshya* and *Vatahara* etc. *Kala* (season) are the major factors that decide potency and growth of the plants. Growth and potency of plants changes as per season (*Kala*). Acharya has mentioned collection of *moola* (root) in different season according Acharya Charaka collection of *moola* (root) in

*Grishma* (summer)<sup>[1]</sup>, *Sushurta* in *Varsha* and *Raj Nighantu* in *Shishira*.<sup>[2]</sup> The qualitative and quantitative phytochemical variation in *Eranda moola* (root) as per season human and plant both are affected by season.<sup>[3]</sup> Now-a-days we have to recommend this overlooked and untouched part of Ayurveda, and give due consideration to not only accessibility to drug but also to ecological factor like earth, temperature, rainfall time of year and their several effect on drug. So here an attempt is been made to find out authenticity behind the effect of diverse region on quality and action of drug which are collected from different regions. Ayurveda declares each and every materials in this world, if used cautiously, has potential to cure illnesses and thus has medicinal qualities.<sup>[4]</sup> the topic of standardization of Ayurvedic medicaments is “of broad and current interest”. Presently it has become mandatory to give due to deliberation to all the dynamics which affect the potency of the drug consideration. Calibration of drug of plant origin is need of the hour in order to approve its effective therapeutic worth and stand out in crowded global market. Calibration of this embraces their authentication climatic zones, collection season and such others. Among these site of collection of the useful part of the plant plays imperative role to assure the superiority of drug.

## MATERIAL AND METHOD

### Sample Collection

Fresh and healthy plant part of *Ricinus communis* Linn. like root were collected in separate sterile polythene bag from the *Sadharana Desha* collected plant parts were examined with the help of The botanically identified and authentication sample of *Eranda* roots (*Ricinus communis* Linn.), (Compared with BARO 123450010899, 10902) from Department OF Botany Faculty of Science The Maharaja Sayajirao University of Baroda Vadodara Gujrat.

The fresh sample of *Ricinus communis* root were taken from *Sadharana Desha* and were dried in shade for 2 to 3 weeks.

After that dried samples breakup the small particle by the help Mortar and pestle (iron *khalva*) after were ground to fine powder distinctly with the help of electric grinder.

## PHYTOCHEMICAL ANALYSIS<sup>[5]</sup>

### QUALITATIVE ANALYSIS

Following standard protocols were used for qualitative analysis of sample to check for the presence of alkaloids carbohydrate, flavonoids, Saponins Tannins, and Terpenoids.

**Alkaloids**

With dragendroff's reagent:

The *Eranda* root is treated with few drops of dilute 2N HCL and 0.5ml Dragendroff's reagent. Brown precipitate is attained in sample.

**Flavonoids**

If the *Eranda* root powder mix with neutral lead acetate gives yellow, orange, red or brick color precipitation. But sample of *Eranda* roots are absent in this character.

**Triterpenoids****Salkowski test**

A red purple color appears when a chloroform solution of sterol (*Eranda* root sample) is treated with an equal volume of conc. H<sub>2</sub>SO<sub>4</sub>.

Present triterpenoids in sample of *Eranda* roots.

**Tannins**

Take aqueous extract of *Eranda* root sample. Add very dilute solution of the ferric chloride, blue color changes to olive-green.

If the *Eranda* root mix with 5% lead acetate solution tannins give precipitate which turns red on addition of KOH solution on excess addition precipitate is dissolved.

Present tannin in sample of *Eranda* roots.

**Saponins**

To an aqueous of *Eranda* root sample MG add solution of lead acetate, formation of white precipitate indicates the presence of saponins. But samples of *Eranda* roots absent in this characters.

**Carbohydrate****Fehling test**

To 2gm *Eranda* roots sample add equal volume of Fehling A and Fehling B mixture. Place in boiling water bath for 5-6 minutes a red precipitate formed. Present Carbohydrates in sample of *Eranda* roots.

**Iodine test**

Acidify the *Eranda* roots sample with HCL and add 1 drop of the mixture to a solution of Iodine in KI. The formation of blue color indicates the presence of starch; a red color indicates the presence of glycogen.

**Steroids**

**Salkowski's test:** to 2 ml of chloroform extract of the drug, 1 ml of concentrated  $H_2SO_4$  was added with *Eranda* roots sample through side of the test tube.

Absent steroids in sample of *Eranda* roots.

**Liebermann- Burchad's test:** To 1 ml of petroleum ether extract of the drug in chloroform 2 ml acetic anhydride solution was added with *Eranda* roots sample followed by 1 ml of concentrated Sulphuric acid solution.

Absent steroids in sample of *Eranda* roots.

**QUANTITATIVE ANALYSIS**

S.N	Physico-chemical parameter	Sample	API
1	Loss on Drying	4.99	Not available
2	Total Ash	4.99	Not more than 8%
3	Acid insoluble Ash	1.45	Not more than 1%
4	Water soluble extractive	9.57	Not less than 9%
5	Alcohol soluble	4.68	Not less than 3%
6	Assay of Alkaloid	0.50	Alkaloid Ricinine

**CHROMATOGRAPHIC TECHNIQUES**

Chromatography is a method in which a chemical combination carried by a liquid or gas is divided into components as result of differential spreading of the solutes as they run around or over a stationary liquid or dense phase.

**HPTLC (3D OVERLAY CHROMATOGRAM @ 254nm)**

Spot no	Sample
1	0.60
2	0.74

**3D OVERLAY CHROMATOGRAM@366nm**

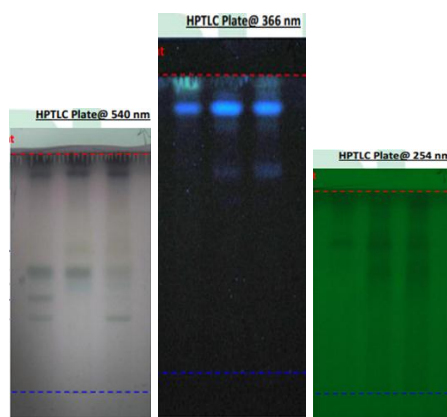
Spot no	Sample
1	0.68
2	0.83
3	0.90

**3D OVERLAY CHROMATOGRAM@540nm**

Spot no	Sample
1	--
2	0.41
3	0.45
4	0.61
5	0.92

**RESULT AND DISCUSSION**

Qualitative analysis showed the presence of Alkaloids, Triterpenoids, Tannin and Carbohydrate of the samples but Flavonoids, Steroids and Saponins are absent in samples and quantitative values is compared to API (Ayurvedic pharmacopeia of India) all quantitative values are good according to API. But loss on drying values is not mentioned in API Ash value, Acid insoluble, Water soluble extractive Value, Alcohol soluble and Alkaloid is good value compared to API. In HPTLC *Ricinoleic* acid is the active principle of the *Ricinus communis* Linn. Roots the sample shows the maximum spot present in TLC plate in different  $R_f$  values (254nm, 366nm and 540nm),

**CONCLUSION**

Raw drug provide needed intermediates for final synthesis of active compounds. The standardization of quality control of raw drug but some chemical compound are absent in root samples. But quantitative value are much superior extractive values in samples. The healthy sample collected is found better because of the extra extractive values (HPTLC).

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