



# Qualitative detection of Genistein from *Acalypha indica* L by PC.

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## ABSTRACT

Isoflavones from *Acalypha indica* L (Euphorbiaceae) was extracted by using different solvents. It was identified and detected by Paper Chromatography (PC) and spectroscopic method. Isoflavone like Genistein was qualitatively detected from *Acalypha indica*.

**Keywords:** Isoflavones, Genistein, *A. indica*, PC, spectroscopy.

## INTRODUCTION

Flavonoids are natural pigments comprise a large group of bioactive compound containing phenolic-OH. These are classified in the major and minor in form. The minor flavonoids are chalcones, aurones, flavanones, dihydrochalcones, isoflavones etc. These classes are of limited natural distribution. Chemically the minor flavonoids are closely related to each other with major flavonoids. Isoflavones are isomeric with the flavones and differ only in the position of attachment of the B-ring to the central pyran nucleus. Common isoflavones have the usual 5,7,4' or 5,7,3,4' hydroxylation pattern. Genistein is a major isoflavone in soy and soy based food consumed by people in Asia (Ronis, 2016). It has also used to help lower chances of prostate carcinogenesis and breast cancer (Sak, 2017, Uifalean *et al.*, 2015). Genistein plays an important role in cell culture as well as animal models (Kim *et al.*, 2014). It also shown as antioxidant, anti-tumor and antiangiogenesis activities (Record *et al.*, 1995, Suzuki *et al.*, 2014, Su *et al.*, 2005).

*Acalypha indica* L (Euphorbiaceae) is erect, sparsely pubescent herb, stems angular, leaves are ovate-elliptic, serrate, acute, petiole longer than blade, flowers androgynous, axillary, male minute, female several at the base, ovary globose, fruits greenish, hispid, seeds are brown in colour. It is found on old wall of houses, road sides and along banks of water courses. Taxonomically and chemically, this plant is well studied but the isoflavones chemistry is ignored. Hence, the present study was undertaken to qualitative detection and identification of Genistein in *Acalypha indica* L.

## MATERIALS AND METHODS

*Acalypha indica* L was collected from Basmathnagar, Dist. Hingoli (M.S.) India and it was identified on the basis of the morphological characters up to the species level.

### Preparation of plant extract:

The plant material i.e. stem, leaves, flower and seeds were dried at 50°C in Oven. The dried material was treated with light Petroleum ether for 12 hrs. at room temperature and it was filtered through Whatman filter paper No. 1. The filtrate was concentrated in Rotary vacuum evaporator (R.V.E.) at 40°C to obtain residue. Chlorophyll and waxy matter free residue were treated with 80% Ethanol for 24 hrs. at room temperature. Again, it was filtered through Whatman filter paper No. 1. The filtrate was treated with Ethyl acetate and concentrated in R. V. E. and it was used for Paper Chromatography to identification of Isoflavones. Two chromatograms were prepared and spotted Ethyl acetate solution on the proper site of each chromatogram. Spotted chromatograms were dried by Hair dryer. These dried chromatograms were developed in BAW (n-Butanol-Acetic acid-Water; 4:1:5) and 30% HOAc solvents system, respectively. These papers were dried and identified the colours

under UV light with fuming of Ammonia. The colour was identified and calculated  $R_f$  value of Isoflavone.

### Spectral analysis:

The proper band of each chromatogram was marked by pencil. Each band was cut out and taken in the clean test-tube and eluted with 95% of Ethanol, separately. The elution was continued till the paper become colourless. The ethanolic solution was filtered through Whatman filter paper No.3, separately. The filtrate was used for spectrophotometric identification. The absorption spectra of each solution of isoflavone was measured by scanning the sample in the region between 300-325 nm.

## RESULT AND DISCUSSION

Isoflavone like Genistein from *Acalypha indica* L was identified and qualitatively detected by Paper Chromatography and spectroscopic method. Genistein was appeared as dull brown in colour in presence of ammonia fuming under UV light.  $R_f$  value of this isoflavone was measured and calculated as 94 in BAW solvent system (Table 1). Genistein was not recorded in 30%HOAc solvent system. The spectral value of present isoflavone was observed in 95% Ethanol as 325 nm (Table 2).

**Table 1** Detection of Genistein (Isoflavone) from *Acalypha indica* L. on the basis of the colour and  $R_f$  value.

Sr. No.	Colour in UV+NH <sub>3</sub>	$R_f$ value (x 100) in		Pigment	Class
		BAW	30% HOAc		
1	Dull brown	94	--	Genistein	Isoflavones

**Table 2** Detection of Genistein from *Acalypha indica* L. on the basis of the absorption spectra

Sr. No.	Spectral max. in EtOH (nm)	Pigment	Class
1	325	Genistein	Isoflavones

The isoflavones are colourless compounds and are a rather neglected group of flavonoids. They have been largely ignored in plant surveys but they happen to occur in several economically important plants.

*Acalypha indica* is neglected because of weed but it contains Genistein (Isoflavone). This isoflavone is widely used in medicine because it shows antioxidant properties, anticancer activities and also shows chemopreventive and chemotherapeutic effects. So, this weed plant is also source of Genistein.

### Conflict of Interest

The author declares that there is no conflict of interest.

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