International Multidisciplinary Research Journal 2012, 2(3):51-52
ISSN: 2231-6302
Available Online: http://irjs.info/

INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL

Detection of minor flavonoids from *Tragia plukenetii* A. R. Smith

V.T.Narwade[1], A. A.Waghmare[2] and A. L. Vaidya[3]

[1]Bahirji Smarak Mahavidyalaya, Basmathnagar Dist.Hingoli (M.S.), India.
[2]Toshniwal college, Sengaon Dist. Hingoli (M.S.), India
[3]Adarsh college, Hingoli Dist. Hingoli (M.S.), India

Abstract
The minor flavonoids from *Tragia plukenetii* A. R. Smith were extracted by using different solvent and they were identified and detected by Paper Chromatography (PC) and spectroscopic method. The minor flavonoids classes like chalcones, aurones and flavanones were detected from *T. plukenetii* A. R. Smith.

Keywords: Minor flavonoids, *T. plukenetii* A. R. Smith, PC, spectroscopy.

INTRODUCTION

Flavonoids are natural pigments and biological active compounds containing phenolic –OH groups. The minor flavonoids are conveniently described as the related derivatives of the major flavonoids. They are limited natural distribution in plants. These flavonoids classes of plants are chalcones, aurones, flavonones, isoflavones, biflavonyls and leucoanthocyanidins. Chalcones and dihydroflavonols are precursor compounds in the biosynthesis of the major flavonoids in plants. Chalcones and aurones are together termed as anthochlors pigments. Chemically, the minor flavonoids are closely related to each other and to the major flavonoids. Sulphuretin (class aurones) was extremely a potent inducer of nodulation gene in plant [1]. Butein (Chalcone) shows the most potent antiproliferative agent [2], cytotoxic effect on human colon adenocarcinoma cell [3], inhibitory activity against HIV-1 protease [4] and also show inhibits proliferation in breast cancer cells [5]. Naringin (Flavanone) exerts a variety of pharmacological effects such as anticancer activity [6], blood lipid lowering and antioxidant properties [7 and 8]. Flavonoids show antiviral activities [9]. *Tragia plukenetii* A. R. Smith (Family-Euphorbiaceae) is hirsute, scandent under shrub, much branched, hispid with stinging hairs, leaves palmately 3-partite, pinnatifid, petioles and leaf mainly hispid with stinging hairs and found in hedges around fields, along roadsides. Taxonomically, this plant is well studied but the minor flavonoids chemistry is ignored. Hence, the present study was undertaken to detection and identification of the minor flavonoids in the same plant.

MATERIALS AND METHODS

Tragia plukenetii was collected from Dabhad, Dist Nanded (M.S.) India and it was identified on the basis of the morphological characters up to the species level.

Received: Jan 05, 2012; Revised: Feb 10, 2012; Accepted: March 08, 2012.

*Corresponding Author

V.T.Narwade
Bahirji Smarak Mahavidyalaya, Basmathnagar Dist.Hingoli (M.S.), India

Email: narwadevilas@gmail.com

Preparation of plant extract for minor flavonoids

The plant material i.e. stem and leaves were dried at 50^{0}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. The filtrate was concentrated in Rotary vacuum evaporator (R.V.E.) at 40^{0}C to obtain residue. Chlorophyll and waxy matter free residue was treated with 80% Ethanol for 24 hrs. at room temperature. Again, it was filtered through whatman filter paper. The filtrate was treated with ethyl acetate and concentrated in R.V.E. and it was used for Paper Chromatography to identification of minor flavonoids. 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 PhOH (Phenol-Water; 3:1) solvent system, respectively. These papers were dried and identified the colors under UV light with fuming of ammonia. The colors were identified and calculated R_f values of minor flavonoids.

Table 1 Detection of minor flavonoids from *Tragia plukenetii* A. R. Smith on the basis of the colors and R_f values

Sr.No.	Color in UV+NH3	R_f value (x100) in		Pigments	Class
		BAW	PhOH		
1.	Bright yellow	---	70	Sulphuretin	Aurones
2.	Brown	78	---	Butein	Chalcones
3.	Yellow-green	59	---	Naringin	Flavanones

Spectral analysis

The proper bands of each chromatogram of minor flavonoids was taken and eluted in 95% Ethanol, separately. The elution was continued till the paper become colorless. Each mixture was filtered through whatman filter paper, separately. Each filtrate was used for spectrophotometric identification. The absorption spectra of each solution of minor flavonoids were measured by scanning the sample in the region between 300-400 nm.

Table 2. Detection of minor flavonoids from *Tragia plukenetii* A. R. Smith on the basis of the absorption maxima

Sr. No.	Spectral max. in EtOH (nm)	Pigments	Class
1.	399	Sulphuretin	Aurones
2.	382	Butein	Chalcones
3.	330	Naringin	Flavanones

Results and Discussion

The minor flavonoids like aurones, chalcones and flavanones from *Tragia plukenetii* A. R.Smith were identified and detected by Paper Chromatography and spectroscopic method. Aurones like sulphuretin was appeared as bright yellow in color in presence of ammonia fuming under UV light. R_f value of this aurone was measured as 70 in PhOH solvent system (Table 1). The other minor flavonoids like butein (chalcones) and naringin (flavanones) were appeared as brown and yellow-green in colors, respectively in presence of ammonia fuming under UV light. R_f values of these flavonoids were measured as 78 and 59, respectively in BAW solvent system (Table 1). Butein and naringin were not observed in PhOH solvent and sulphuretin was not recorded in BAW solvent system (Table 1). The spectral values of minor flavonoids were recorded as 399 (Sulphuretin), 382 (Butein) and 330 nm (Naringin) in 95% Ethanol (Table 2).

Tragia plukenetii is neglected because of its stinging hairs characters but it contains minor flavonoids like sulphuretin, butein and naringin. These flavonoids widely used in medicine because they show antiviral activities and antioxidant properties and also an important a potent inducer of nodulation gene in plants. So this stinging hairs plant is also source of the minor flavonoids.

REFERENCES

[1] Gyorgypal, Zoltan, Kondorosi, Eva; Kondorosi, Adam. 1991. The aurone sulphuretin was an extremely potent inducer of nodulation genes even without plasmid borne Nod D. *Mol. Plant-Microbe Interact*. 4(4): 356-64.

[2] Ramanathan, R., Tan, C. H., Das, N. P. 1992. Cytotoxic effect of plant polyphenols and fat soluble vitamins on malignant human cultured cells. *Cancer Letters*. 62:223-2234.

[3] Chin C., Yit, Nagaratnam P. Das 1994. Cytotoxic effect of butein on human colon adenocarcinoma cell proliferation. *Cancer Letters*. 82: 65-72.

[4] Xu, H. –X, Wan, M., Dong, H., But, P. P. –H and Foo, L. Y.2000. Inhibitory activity of flavonoids and tannins against HIV-1 protease. *Journal of Biological and Pharmaceutical Bulletin*.23:1072-1076.

[5] Bear, W. L. and Teel, R. W. 2000. Effect of Citrus Flavonoids on the Mutagenicity of Heterocyclic Amines and on Cytochrome P450 1A2 Activity. *Anticancer Res.*20:3609-3614.

[6] Wang, Y., Chan, F.L., Chen, S. and Leung, L.K. 2005.The plant polyphenol butein inhibits testosterone induced proliferation in breast cancer cells expressing aromatase. *Life Sci.*20:77 (1): 39-51.

[7] Choi Myung Sook, KyungMin Do, Yong Bok Park, Seon-Min Jeon, Tae-Sook Jeong, Yeoun-Kyung Lee and Song-Hae Bok. 2001. Effect of naringin Supplementation on Cholesterol Metabolism and Antioxidant Status in Rats Fed High Cholesterol of with Different Levels of Vitamin E. *Ann. Nutr Metab*. 45:193-201.

[8] Di Majo, D., Giammanco, M., La Guardia, M., Tripoli, E., Giammanco, S. and Finotti, E. 2005. Flavanones in Citrus fruit: Structure antioxidant activity relationship. *Food Res. Intern.* 38 : 1161-1166.

[9] Ai -Lin Liu, Hai -Di Wang, Simon Ming Yuen Lee, Yi –Tao Wang, Guan –Hua Du 2008. structure-activity relationship of flavonoids as influenza virus neuraminidase inhibitors and their in vitro anti-viral activities. *Bioorganic & Medicinal Chemistry*. 16: 7141-7147.