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QUALITATIVE ANALYSIS OF PRIMARY METABOLITES OF *VERBESINA ENCELIOIDES* (CAV.) BENTH. & HOOK

Science

Vinita Singh Mewar University, Chittorgarh Chittorgarh, Rajasthan

Neha Wal* Mewar University, Chittorgarh Chittorgarh, Rajasthan *Corresponding Author

Anirudha Rishi St. Wilfred's College of Arts, Commerce & Science, Panvel, Navi Mumbai

ABSTRACT

The chemical analysis of primary metabolites in Verbesina encelioides has not been reported. The present investigation deals with the evolution of primary metabolites. Verbesina encelioides plant is rich in primary metabolites. Most of natural products are compounds biosynthetically derived from primary metabolites such as amino acids, carbohydrates, fatty acids and are generally categorized as secondary metabolites (Bonner and varner, 1965; Butenandt et al, 1940).

KEYWORDS

Verbesina, myoinositol, β-carotene

INTRODUCTION :-

Verbesina encelioides (Cav.) Benth. & Hook. Fil ex Gray (Asteraceae), commonly known as golden crown beard, is one of the most widespread species. The plant is an upright to sprawling annual commonly of 30- 50 cm height. Its leaves are toothed or lobed with white hairs on both leaves and stem, flower heads are found on elongated stalks and resemble small sunflower, 2.5-5.1 cm in length and consists of numerous disk flowers and approximately 12 ray flowers, which blooms from April to October. Primary metabolites obtained from higher plants for commercial use are high volume, low-value bulk chemicals. They are primarily used as industrial raw materials, food or food additives. These materials readily available in large quantities. However, some primary metabolites such as myoinositol and β-carotene are expensive because of the difficulty of their extraction, isolation and purification.

Collection of plant material

(a) *Verbesina encelioides*

Verbesina encelioides plants were collected (July-August, 2008) from state forest nursery Jaipur and nearby area of Jaipur district , Plant was identified by comparing with those available in the Herbarium, Department of Botany, University of Rajasthan, Jaipur, India.

Qualitative analysis of Primary Metabolites

1. Preparation of plant materials

The freshly collected samples were washed and air-dried under shade at room temperature for 7- 10 days. After drying, the samples were reduced to small piece, and the material was grounded in to fine powder using pestle mortar, followed by sieving using a muslin cloth. Powdered samples were then stored in air tight containers for further use.

Extraction of Plant Material

The plant material which was already air dried, was crushed to smaller pieces, redried, coarsely powdered and was then exhaustively extracted with methanol in a Soxhlet Appratus for 72 hours. The extract was filtered and the clear supernatant was collected, covered, labeled and used for the qualitative phytochemical screening.

RESULTS :

Estimation of Primary metabolites of *Verbesina encelioides*:-

Carbohydrates

(a) Soluble sugar

Quantitative estimation of glucose showed that content of glucose was more in Root i.e., 7.20 mg/gdw and 6.65 mg/gdw in leaf. (Table 1,) and minimum amount i.e., 3.80 mg/gdw in stem

(b) Starch The maximum amount of starch was found in leaf (7.12 mg/gdw) and minimum amount was observed in flower (2.3 mg/gdw (Table1, Fig.1).

Protein The maximum amount of protein was observed in leaf (44.40 mg/gdw) and minimum amount was observed in root (22.62 mg/gdw) (Table 1, Fig.1).

(3) Lipid Results obtained from quantitative estimation of lipid showed that flower of *Verbesina encelioides* contains more lipids i.e., (72.20 mg/gdw) and stem part contain lowest amount of lipid i.e., (21.13 mg/gdw) (Table 1, Fig.).

Phenol The darkening of cut or dying plant parts is caused by the reaction of phenols. Root contains highest amount of phenol (72.46 mg/gdw) and stem contain lowest amount (19 mg/gdw) (Table,1, Fig.1).

Table 1. Primary metabolites and total phenol of *Verbesina*

S. No.	Plant parts	Carbohydrates mg/gdw	Starch mg/gdw	Protein mg/gdw	Phenol mg/gdw
1	Leaf	5.65	5.12	28.41	22.55
2	Stem	4.61	2.94	29.13	18.31
3	Root	4.20	4.43	19.60	26.43
4	Flower	4.17	3.3	29.73	19.33
5	Seeds	5.40	4.87	30.23	17.78

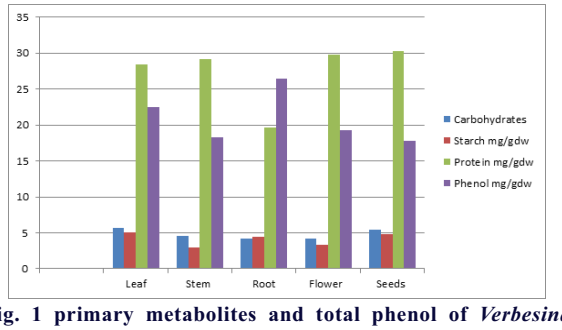

Fig. 1 primary metabolites and total phenol of *Verbesina encelioides*

The chemical analysis of primary metabolites in *Verbesina encelioides* has not been reported. The present investigation deals with the evolution of primary metabolites. *Verbesina encelioides* plant is rich in primary metabolites. Most of natural products are compounds biosynthetically derived from primary metabolites such as amino acids, carbohydrates, fatty acids and are generally categorized as secondary metabolites (Bonner and varner, 1965; Butenandt *et al,* 1940).

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