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PHYTOCHEMICAL STUDIES ON SOME SELECTED SPECIES OF *ASTERACEAE* FAMILY OF RAJASTHAN, INDIA

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ABSTRACT

The Asteraceae is a large and widely spread family of vascular plants. The Plants of this family are known to have a variety of pharmacological activities. *Verbesina alternifolia*, *Parthenium hysterophorus*, *Tridax procumbens* is collected from Ajmer district and identified with taxonomical characters. Alkaloids (Wagner's test, Mayer's test, Hager's test), Steroid (Libermann Burchard test, Salkowaski), Glycosides (Keller kilani test), and Flavonoids (Lead Acetate test) are isolated from the *Verbesina alternifolia,, Parthenium hysterophorus, Tridax procumbens* plant material collected from Ajmer district.

***Keywords*:** Phytochemical studies, Asteraceae, *Verbesina alternifolia*,, *Parthenium hysterophorus*, *Tridax procumbens*

INTRODUCTION

The Asteraceae family is known as a Compositae. It is a largest family of the vascular plants. It consist more than 32,000 known species of vascular plants. It has more than 1,900 genera. Many species of Asteraceae family are annual, biennial, or perennial herbaceous plants, but there are also shrubs, herbs and trees. It is mostly occurs in desert and cold or semi-desert climates. Following workers work on the members of Family Asteraceae Baker 1970; Trease and Evan 1983; Murray *et al*. 1989; Gibson *et al*. 1998; Tabuti *et al*. Dillard and German 2000; 2003; Farinola and Piller 2005; Karunkar and Joshi 2010; Mundada and Shivhare 2010; Pai 2011; Sawant and Godghate 2013; Ahmad *et al*., 2018; Beck *et al.,* 2018; Bharathi and Udaya kumar 2019 and Ahmad *et al*., 2020.

Taxonomical feature

Parthenium hysterophorus L., (Table – 1, Fig. 1A)

Parthenium hysterophorus L., Sp. Pl. 988. 1753; Rao, in J. Bombay Nat. Hist. 54: 218. 1956; Shetty& Singh Fl. Rajasthan 1: 425. 1987.

Herbaceous aromatic, annual, erect, up to 1 m high. Stem is tall, erect, un branched at base, much branched apically, glandular. Leaves alternate, cauline, initially forming a basal rosette, smaller upward, deeply pinnately dissected or bipinnatifid; larger toward base, apex acute, puberulous and glandular on both surfaces, petiolate.Inflorescences corymbose cymes, terminal and axillary, yellowish puberulous. numerous, white. Involucral bracts outer involucral bracts 5, narrowly ovate, acute, puberulous; margins glandular, subtending. Corolla white to light yellow, ovate-orbicular, bilobed, obtuse.Style long with stout, obtuse stigma. Disc florets many; corolla light yellow, Stamens 5; anthers linear.

Tridax procumbens L., (Table – 1, Fig. 1B)

Tridax procumbens L., Sp. Pl. 900.1753; Hook. f., Fl. Brit. India 3: 311. 1881; Duthie, Fl. Gangetic Plain 1: 475. 1905; Bhandari, Fl. Indian Desert 190. 1978; Singh, in Shetty& Singh Fl. Rajasthan 1: 439. 1987;

An annual or perennial herb, caulescent, decumbent. Stem procumbent, branched at base, branches slender, hirsute. Leaves short petiolate, ovate to ovate-lanceolate, apex acute or acuminate, margins deeply irregularly serrate, pinnatisect, segments few, narrow, base cuneate; Heads solitary, erect peduncles; peduncle long. Involucral bracts hispid; outer bracts densely glandular hairy, elliptic, inner bracts whitish-green, oval, apiculate. Ray florets pale yellow to white, ligulate, style branches recurved. Disc florets yellow to purple tinged; limb narrower, tubular with 5 lanceolate lobes; style branches revolute, flattened. Achenes narrowly obconical, Pappus unequal, of shiny feathery bristles.

Verbesina alternifolia (Table – 1 , Fig. 1C)

Verbesina alternifolia *Eclipta latifolia* L. f. Suppl. 378. 1781. *Blainvillea rhomboidea* Cass., in Dict. Sci Nat. 29: 494. 1823; Duthie, Fl. Gangetic Plain 1: 469. 1905 *B. latifolia* (L. f.) DC. ex Wight, Contr. Bot. Ind. 71 1834; Hook. f., Fl. Brit. India 3: 305.1881

Erect, annual herb, Stem clothed with white hairs, Leaves alternate to sub opposite, ovate-lanceolate or rhomboid-ovate a with cuneate or rounded base, apex acuminate, dentate serrate, Heads white, soliatry, radiate, Involucral bracts foliaceous. Ray florets few, white, pistillate. Disc florets tubular, bisexual. Stamnes 5; anthers linear, base obtuse. Achenestriquetrous, disc achenes laterally compressed, truncate at apex.

MATERIAL AND METHODS

Flowers were taken for phytochemical analysis and the following tests were performed. Phytochemical analysis have been done by standard procedure as described by the various extracts (*Verbesina*, *Parthenium* and *Tridax*) will be analysed for the presence of Alkaloids, Steroid, Glycosides and Flavonoids.

Alkaloids

(i) Wagner's Test

The 1 ml of flower extract is mixed in to 2 ml of wagner's reagent. The Appearance of reddish brown precipitate represents the positive results.

(ii) Mayer's Test

The 1 ml of flower extract is mixed in to 2 ml of mayer's reagent in a test tube. The Appearance of dull white precipitate shows positive results.

(iii) Hager's Test

The 1 ml of flower extract is added in to 3 ml hager's reagent. The Appearance of yellow precipitate gives positive result of Alkaloids.

Steroid

(i) Libermann- Burchard Test

The 1 ml of flower extract is added in to 2 ml of chloroform in a dry test tube. After this process 10 drops of acetic anhydride and 2 drops of concentrated H_2SO_4 have been added in the test tube. The colour has been change into red, then blue and finally bluish green colour gives positive result of steroid.

(ii) Salkowaski Test

The 1 ml of flower extract, chloroform and concentrated H_2SO_4 is mixed in attest tube. After some time two layers are appear in the test tube. In this test tube the colour change from bluish red to cherry red in the presence of chloroform layer and green fluorescence in acid layer gives positive result of steroid.

Glycosides

(i) Keller Kilani Test

The 1 ml of flower extract is mixed with acetic acid containing of ferric chloride, mixture. After some time it is transferred in to a test tube containing concentrated H_2SO_4. The colour change from reddish brown to blue colour at junction of two phases gives positive result of Glycoside.

RESULTS

The flower extracts of *Verbesina alternifolia*, *Parthenium hysterophorus*, *Tridax procumbens* were taken for phytochemical analysis.

(i) Alkaloid test

Wagner test recorded positive in *Verbesina alternifolia* but Mayers and Hagers test are recorded in negative *Parthenium hysterophorus*, *Tridax procumbens.*

(ii) Steroid

Libermann Burchard Test recorded negative in *Verbesina alternifolia*, *Parthenium hysterophorus* and *Tridax procumbens*but Salkowaski Test found positive in *Verbesina alternifolia* and negative in other species.

(iii) Glycosides

Keller Kilani Test for glycosides is recorded negative in all species. It is indicate that Glycosides are absent in these species.

(iv) Flavonoids

Lead Acetate Test for Flavonoids are found positive in *Verbesina alternifolia* and *Parthenium hysterophorus* but negative in *Tridax procumbens.*

DISCUSSION

Three species of family Asteraceae *Verbesina alternifolia*, *Parthenium hysterophorus* and *Tridax procumbens* have been taken up for phytochemistary. Alkaloids are observed in *Verbesina alternifolia* with Wagner's test while steroids and Flavonoids are recorded in *Verbesina alternifolia* and *Parthenium hysterophorus*. Glycosides are completely absent in all members of Family Asteraceae.

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Table 1: Phytochemical Analysis of the flower extracts of *Verbesina alternifolia, Parthenium hysterophorus and Tridax procumbens*

S. No.	Name of the Test	*Verbesina alternifolia*	*Parthenium hysterophorus*	*Tridax procumbens*
Alkaloids				
1.	Wagner's Test	Positive	Negative	Negative
2.	Mayer's Test	Negative	Negative	Negative
3.	Hager's Test	Negative	Negative	Negative
Steroid				
1.	LibermannBurchard Test	Negative	Negative	Negative
2.	Salkowaski Test	Positive	Negative	Negative
Glycosides				
1.	Keller Kilani Test	Negative	Negative	Negative
Flavonoids				
1.	Lead Acetate Test	Positive	Positive	Negative

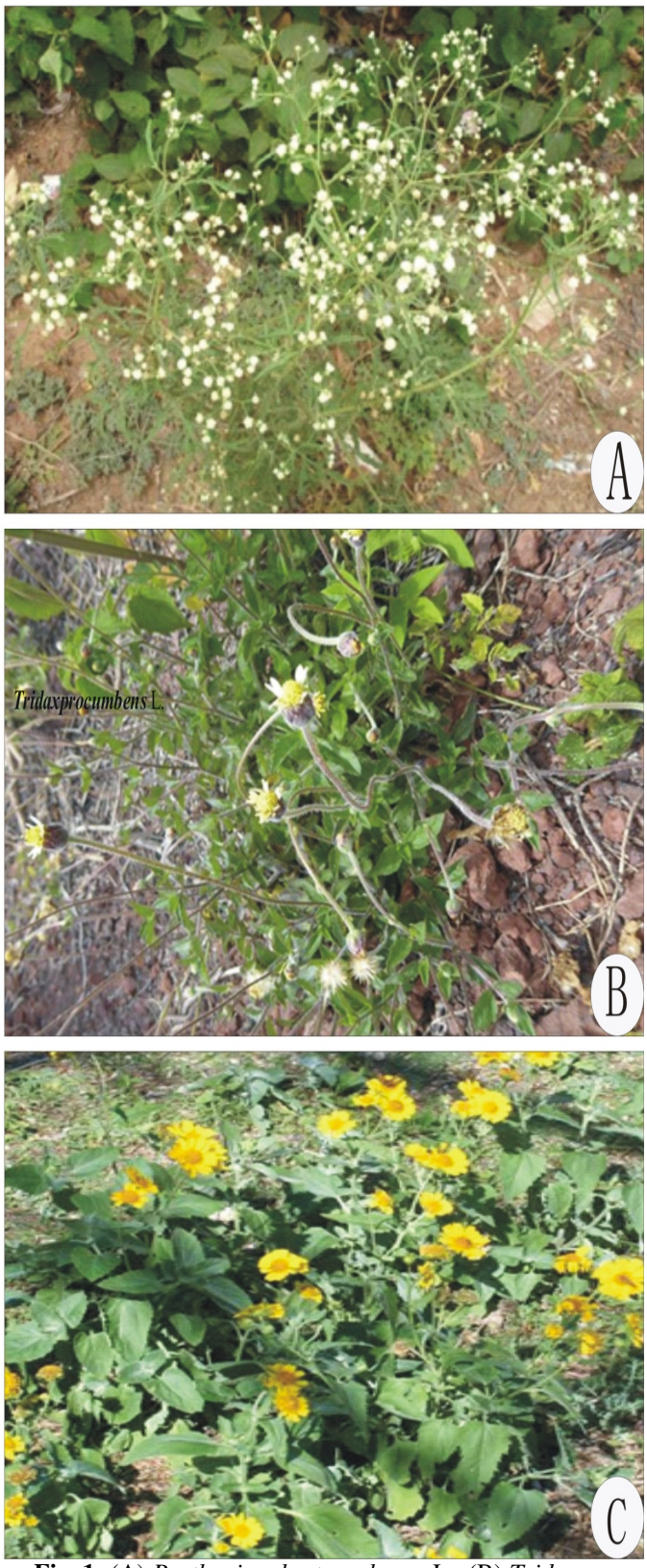

Fig. 1: (A) *Parthenium hysterophorus* L.; (B) *Tridax procumbens* L.; (C) *Verbesina alternifolia*

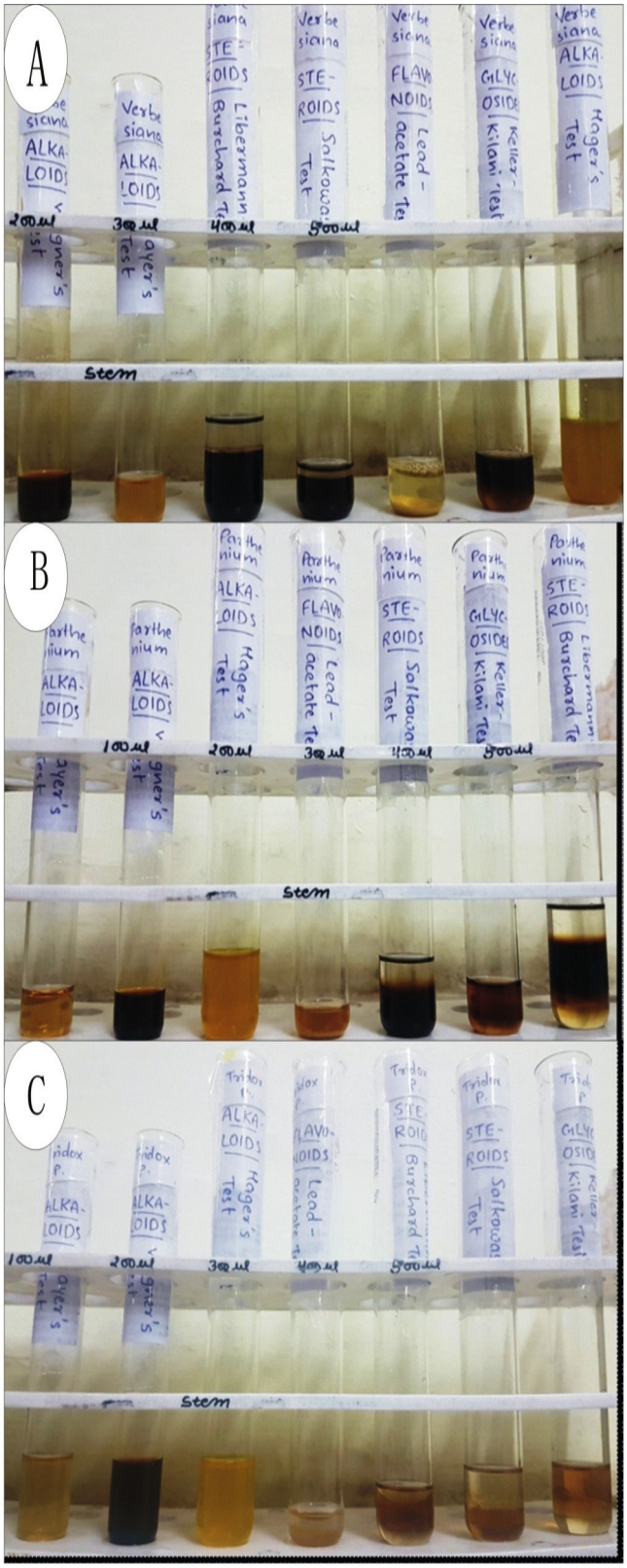

Fig. 1A-C: Phytochemical analysis of flower extraction from A. *Verbisina alternifolia*; B. *Parthenium hysterophorus*; C. *Tridax procumbens*

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