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Wild Stars Asteraceae of Vsk University Campus, Ballari, Karnataka, India

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ABSTRACT:
Asteraceae is also called star family and largest family in the flowering plants with having 32000 species and spread all over the world including VSK University Campus Ballari, Located at 15.1533^{0}N, 76.8768^{0}E. The study is conducted from 2023 to 2024 with the aim of report all the Asteraceae members of Campus, with updated nomenclature, Dichotomous Key for easy identification, Description, Synonyms, Common name, Kannada name, Phenology, Photography, few medicinal reports and determine the soil composition of VSK University Campus Ballari. The result reveals that 22 species under 18 genera are collected, of which Acanthospermum hispidum, Ageratum conyzoides, Blumea axillaris, Blumea lacera, Blumea obliqua, Cyanthillium cinereum, Dicoma tomentosa, Echinops echinatus, Eclipta prostrate, Erigeron bonariensis, Parthenium hysterophorus, Pseudoconyza viscose, Tridax procumbens, Vicoa indica and Xanthium strumarium are shows medicinal properties.

Keywords: Star, Soil, Dichotomous key, Xanthium strumarium, medicinal, Description.

INTRODUCTION:

The Asteraceae is also called as Star family because the floret of this family looks like star shape. The family Asteraceae is one of the advanced and largest family in the angiosperms with having 32000 species under 1900 genera (The plant list, 2016). The species of this family are cosmopolitan with different habitat except Antarctic and deep arctic. The species of this family propagates highly in subtropical and lower temperate latitudes in the arid and semiarid regions (Farhana Easmin et al., 2021). The species of this family are mostly annual and perennial herbs, rarely shrubs, vines and less number of trees. The propagation of members of this family mainly by seeds and fruits.

Vijayanagara Sri Krishnadevaraya Universiy, Ballari, (VSKUB) is established by government of Karnataka in 2010 towards west side of Ballari city under 95.37 acres of land. The vegetation of the Campus composed by xerophytic condition with block sandy soil. The campus is occupied by many different floristic families with different habit viz., Herbs, Shrubs, Vines, Trees and many other species. Recently in the year 2017-18 Kavitha Sagar reports 130 species in VSKU Campus Ballari of which Asteraceae family is more dominant with 12 species. Within Four years of time the diversity of Asteraceae family species varies to increases in the Campus due to environmental factors, pollination and support of soil or climate condition. Economically Asteraceae family play very important role with providing food, herbal medicine, ornamental plants and etc.

The present study aims to report all the Asteraceae members of Campus, with updated nomenclature, Dichotomous Key for easy identification, Description, Synonyms, Common name, Kannada name,

Phenology, Photography, medicinal reports and determine the soil composition of VSK University Campus Ballari to know the elements which supports for growth of Asteraceae members.

METHODS AND MATERIALS:

Study area and Time: Vijayanagara Sri Krishnadevaraya University is located at 15.1533° N, 76.8768° E, in the district of Ballari, Karnataka state of south India. The intensive field locality survey of this Campus was conducted from 2023 to 2024.

Plant Collection: The plant collection of Asteraceae family was done by intensive filed survey of VSKUB Campus. The documentation was done by taking photography with GPS location. The collected plant includes with root, stem, leaves, flower, fruits and seeds for writing description and Identification.

Plant Identification: The collected plant specimens are identified by using various National, State, Local floras, books, literatures and Monographs viz., Hooker (Flora of British India),Gamble (Flora of Presidency of Madras), Singh N P (Flora of Eastren Karnataka), Sharma B D et al., (Flora of Karnataka analysis), Ramaswamy S V and Razi B A (Flora of Bangalore district), Raghavendra Rao and Basheer Ahmed Razi (Flora of Mysore district), and Kavitha Sagar and Rajanna (A handbook on weeds of Karnataka).

Preparation of Herbarium: After the completion of Identification of collected plants, the herbarium was prepared. The collected plants are muffled with news papers and pressed under pressing board for drying. After the drying, the specimen was mounted on the standard size herbarium sheet (41 X 29 cm) then labeled with collection number, date, botanical name, family, collectors name, remarks and locality with altitude, latitude, longitude. The prepared herbarium are stored at Department of studies in Botany, VSK University for future reference purpose, and also deposited at Mahatma Gandhi Botanical Garden, GKVK, UAS, Bengaluru.

Preparation of Taxonomical key: After the complete morphological study of each plant, the taxonomical Parallel Key was prepared for easy identification. The two couplets are always next to each other in one after the other lines. At the end of each line there is a number it gives direction for final name of the species.

Data analysis: The collected species are morphologically described and identified using different floras, books, literatures and monographs. With this Soil samples from different sites of campus were collected in triplicates to assess the following parameters on each sample: soil pH, Nitrogen (N), Phosphorous (P), Potassium (k), Calcium (Ca) and salinity. soil analysis done at the ICAR- Krishi vigyan Kendra Hagari-583111. Ballari, Tq and Dt. (University of agricultural sciences, Raichur).

Soil samples collected from different localities, were subjected to physicochemical analysis and are given in below table-1.

Table:-1, Soil composition of VSK University Campus Ballari.

Sl. NO	Sample	Type of soil	pH	Salinity	Nitrogen Kg/hectare	Phosphorus Kg/hectare	Potassium Kg/hectare	Calcium M.E/100gms
1	VSKU bank	Sand mixed black soil	8.53	0.90	55.17	3.20	341.40	30

2	VSKU new hostel	Sand mixed black soil	8.66	0.72	50.16	2.74	163.40	20

RESULTS AND DISCUSSION:

Intensive field locality survey of VSK University Campus from 2023 to 2024 reveals 22 species (Fig.1) under 18 genera of Asteraceae family are Acanthospermum hispidum, Ageratum conyzoides, Blumea axillaris, Blumea lacera, Blumea oblique, Blumea oxyodonta, Cyanthillium cinereum, Dicoma tomentosa, Echinops echinatus, Eclipta prostrate, Erigeron bonariensis, Erigeron sublyratus, Launaea intybacea, Oligochaeta divaricata, Parthenium hysterophorus, Pseudoconyza viscose, Pulicaria angustifolia, Sonchus oleraceus, Tricholepis radicans, Tridax procumbens, Vicoa indica, Xanthium strumarium. Of which Blumea dominant with 4 species followed by erigeron with 2 species and remaining each with 1 species.

Figure. 1: (**A**) Acanthospermum hispidum DC. (**B**) Ageratum conyzoides L. (**C**) Blumea axillaris DC. (**D**) Blumea lacera (Burm.f.) DC. (**E**) Blumea obliqua (L.) Druce (**F**) Blumea oxyodonta DC. (**G**) Cyanthillium cinereum (L.) H.Rob. (**H**) Dicoma tomentosa Cass. (**I**) Echinops echinatus Roxb. (**J**) Eclipta prostrata (L.) L. (**K**) Erigeron bonariensis L. (**L**) Erigeron sublyratus Roxb. ex DC. (**M**) Launaea intybacea (Jacq.) Beauverd (**N**) Oligochaeta divaricata K.Koch (**O**) Parthenium hysterophorus L. (**P**) Pseudoconyza viscosa (Mill.) D'Arcy (**Q**) Pulicaria

angustifolia DC. (**R**) Sonchus oleraceus L. (**S**) Tricholepis radicans DC. (**T**) Tridax procumbens L. (**U**) Vicoa indica DC. (**V**) Xanthium strumarium L.

Dichotomous Key

Key to the genera

1a. Head liguliflorae ……..…. **2**
1b. Head tubuliflorae and liguliflorae or tubuliflorae ……..….. **3**
2a. Leaves apex acuminate. ……... **Launaea**
2b. Leaves apex acute to obtuse. ……... **Sonchus**
3a. Leaves opposite ……..... **4**
3b. Leaves alternate ……... **7**
4a. Stem procumbent. ……... **Tridax**
4b. Stem erect ……..… **5**
5a. Pappus present. ……. **Ageratum**
5b. Pappus absent …….. **6**
6a. Leaves obovate. ……...… **Acanthospermum**
6b. Leaves lanceolate. ……...… **Eclipta**
7a. Plant spiny ……... **8**
7b. Plant not spiny ……... **12**
8a. Leaves petiolate. ……... **Xanthium**
8b. Leaves sessile or subsessile ……... **9**
9a. Head with short stalk. …….. **Dicoma**
9b. Head with long stalk ……..... **10**
10a. Head globose. ……... **Echinops**
10b. Head non globose ……. **11**
11a. Leaves oblong or obovate. ……... **Oligochaeta**
11b. Leaves linear-oblong or lanceolate. …….. **Tricholepis**
12a. Involucral bracts 1 to 2 seriate ……..... **13**
12b. Involucral bracts 3 to many seriate ……. **14**
13a. Leaves lobed. ……... **Parthenium**
13b. Leaves not lobed ……... **Erigeron**
14a. Inflorescence corymb. …….. **Pseudoconyza**
14b. Inflorescence panicle (or) solitary ……... **15**
15a. Head without liguliflorae ……. **16**
15b. Head with liguliflorae ……...… **17**
16a. Anthers tailed. ……. **Blumea**
16b. Anthers not tailed. ……..… **Cyanthillium**
17a. Involucral bracts are in equal in size. ……... **Pulicaria**
17b. Involucral bracts are not equal in size. ……... **Vicoa**

Description and Key to the species

1. Acanthospermum Schrank

Acanthospermum hispidum DC.

Synonyms: Acanthospermum humile var. hispidum (DC.) Kuntze
Common name: bristly starbur
Kannada name: Kadlemullu (ಕಡ್ಲೆಮುಳ್ಳು)
Phenology: Throughout the year
Terrestrial; herb; erect; 50 cm to 80 cm tall; Stem terete, branched, densely hispid; Leaves simple, opposite, ovate or elliptic, 1.8-4.2 X 0.6-2.2 cm, acute apex, base cuneate, serrate margin; Inflorescence solitary; Heads radiate, sessile, heterogamous; Receptical paleate; Bracts 5, 1 seriate; Outer florets female, ligulate, light yellow, apex 3 lobed; Inner florets bisexual, tubular, 5 lobed apex, bright yellow; Achens obovate, compressed, apex with two spines; Pappus absent.

2. Ageratum L.
Ageratum conyzoides L.
Synonyms: Eupatorium conyzoides (L.) E.H.L.Krause
Common name: White Weed
Kannada name: Shweta sahadevi (ಶ್ವೇತಸಹದೇವಿ)
Phenology: July-February
Terrestrial; herb; erect; 40 cm to 110 cm tall; Stem terete, reddish, apex greenish, hairy, branched; Leaves simple, opposite, pubescent, petiolate, ovate, 4-6 X 2.5-4.5 cm, acute apex, bas
e rounded; Inflorescence cymose or corymbose; Head pedicellate, homogamous; Bracts 22-28, 2 seriate, oblong-lanceolate, 3-4 mm long; Florets bisexual, tubular, apex 5 lobed, blue or white; Achenes black, 5 angled; Pappus cape, many, long.

3. Blumea DC.
Key to the species
1a. Leaves semi amplexicaul. …… **B. obliqua**
1b. Leaves not amplexicaul …….…….. **2**
2a. Achenes cylindrical. ……...……. **B. lacera**
2b. Achenes angled …… **3**
3a. prostrate or erect herb; florets yellow. ……..… **B. oxyodonta**
3b. Erect herb; florets purple. ……..….. **B. axillaris**
Blumea axillaris DC.
Synonyms: Blumea mollis Merr. **Common name:** Soft Blumea
Phenology: December-February
Terrestrial; herb; erect; 25 cm to 90 cm tall; Aromatic; Stem terete, viscid, hairy; Leaves simple, alternate, obovate, hairy, 2-6 cm X 0.5-4 cm, acute apex, cuneate base; Inflorescence spiciform panicles; Head heterogamous, terminal cluster, peduncle, pedicellate; Bracts long, linear, hairy; Florets purple, central bisexual, 8-10, glandular, outer female, many; Achenes angled, ribbed, hairy; Pappus 2 – 3 mm long.
Blumea lacera (Burm.f.) DC.
Synonyms: Blumea dregeanoides Sch.Bip. ex A.Rich.
Common name: Lettuce-Leaf Blumea
Kannada name: Gaandhaari (ಗಾಂಧಾರಿ)
Phenology: March-September

Terrestrial or mesophytic; herb; erect; aromatic; 30 cm to 120 cm tall; Stem terete, simple, hairy or glandular; Leaves simple, alternate, elliptic to oblong, apex obtuse, base attenuate, margin serrate or slightly lobed, 8-10 X 2.5-5 cm; Inflorescence panicles; Head heterogamous, terminal; Phyllaris 3 seriate, linear-lanceolate, 1-3 X 0.1-0.3 mm, hairy; Receptacle convex, cavitied; Florets yellowish, Achenes cylindrical, not ribbed or slightly ribbed, hairy; Pappus white.

Blumea obliqua (L.) Druce

Synonyms: Blumea amplectens DC.

Phenology: November-March

Terrestrial; herb; erect; 10 cm to 60 cm tall; Stem terete, branched, sericeous; Leaves simple, elliptic oblong to lanceolate, 0.5-4 X 0.1-2.5 cm, apex acute, base half amplexicaul, lamina scabrid, silky pubescence on both side; Inflorescence cymose; Head heterogamous, solitary, long pedunculate; Involucra bracts 0.5-6.5 mm long, lanceolate; Receptacle convex, glabrous; florets purple, inner bisexual, outer female, tubular; Achenes brown, oblong, hairy; Pappus white.

Blumea oxyodonta DC.

Synonyms: Conyza oxyodonta Wall. ex DC.

Common name: Spiny Leaved Blumea **Phenology:** January-March

Terrestrial; herb; prostrate; 10 cm to 40 cm extend; Stem slender; Leaves simple sessile, alternate, 4-6 X 1.5-3 cm, oblanceolate, obtuse apex, cuneate base, dentate margin; Inflorescence panicles; Head heterogamous; Involucral bracts dense hairy, inner linear, outer lanceolate; Florets yellow, outer female, inner bisexual; Achenes 2.5 mm long, ribbed, hairy; Pappus white.

4. Cyanthillium Blume

Cyanthillium cinereum (L.) H.Rob.

Synonyms: Vernonia cinerea (L.) Less.

Common name: little ironweed

Phenology: July-February

Terrestrial; herb; erect; 23 cm to 11 cm tall; Stem terete, branched, longitudinally ribbed; Leaves simple, alternate, ovate to lanceolate, apex acute, base cuneate, margin crenate,10-20 X 08-15 cm, hairy; Inflorescence corymbs: Head homogamous; Involucral bracts ovate-lanceolate, acute apex, base acuminate, hairy; Florets pinkish-violate; Achenes 1.4 mm long; Pappus white, hairy.

5. Dicoma Cass.

Dicoma tomentosa Cass.

Synonyms: Acilepis lanata Spreng. ex DC.

Common name: Woolly Dicoma

Kannada name: Navananji (ನವನಂಜಿ)

Phenology: August-February

Terrestrial; herb; erect; 5 cm to 29 cm tall; Stem terete, branched, base woody, densely hairy; Leaves simple, alternate, entire, sessile, base attenuate, apex acute, linear-lanceolate, 6-7 X 1.5-2.5 cm; Inflorescence solitary; Head homogamous, sessile or subsessile; Involucral bracts spiny, 4 seriate, pale yellow, linear-oblong; Florets bisexual, tubular, white, 5 lobed; Achenes obovoid, ribbed; Pappus bristly, 2-3 seriate.

6. Echinops L.

Echinops echinatus Roxb.

Synonyms: Echinops spinosus Herb.Madr. ex Wall.

Common name: Indian Globe Thistle

Kannada name: Brahmadande (ಬ್ರಹ್ಮದಂಡೆ)

Phenology: September-March

Terrestrial; herb; erect; 20 cm to 90 cm tall; Stem stout, branched, white cottony hairy; Leaves sessile, alternate, oblong, deeply pinnatifid, 2-4.5 X 6-10 cm, margin spiny, base semi amplexicaul, apex acute with spiny; Inflorescence solitary; Head globose, homogamous; Florets bisexual, white; involucral bracts oblong, spiny; Achenes angled, elongate, glabrous; Pappus present.

7. Eclipta L.

Eclipta prostrata (L.) L.

Synonyms: Eclipta alba Hassk.

Common name: false daisy

Kannada name: Ajagara (ಅಜಗರ)

Phenology: July-March

Terrestrial or mesophytic; herb; erect or prostate; 10 cm to 24 cm tall; Stem terete, hairy; Leaves simple, opposite, sessile or subsessile, hairy, 0.5-3 X 0.1-0.6 cm, oblong or lanceolate, apex acute, base cuneate, margin entire; Inflorescence solitary; Head heterogamous, peduncled; Involucral bracts biseriate, 2-6 mm long, elliptic to lanceolate, apex acute, base cuneate, pubescent outside, glabrous inside; Ray florets white, female, Disc florets many, bisexual; Achenes brown, oblong; pappus absent or small puberulose.

8. Erigeron L.

Key to the species

1a. Leaves oblanceolate or linear-lanceolate. …….. **E. bonariensis**

1b. Leaves obovate. ……...… **E. sublyratus**

Erigeron bonariensis L.

Synonyms: Conyza bonariensis (L.) Cronquist

Common name: Ragweed

Phenology: March-may

Terrestrial or mesophytic; herb; erect; 10 cm to 170 cm tall; Stem terete, branched, longitudinally ribbed, hairy; Leaves simple, alternate, sessile, 0.2-1.6 X 0.5-8 cm, linear-lanceolate, cuneate base, acute apex, serrate margin; Inflorescence panicle; Head heterogamous, peduncled,; Involucral bracts 2 seriate, linear, apex acute, hairy; Ray florets white, female, disc florets yellow, tubular, bisexual; Achenes linear-lanceoloid, compressed; Pappus yellowish.

Erigeron sublyratus Roxb. ex DC.

Synonyms: Aster benghalensis B.Heyne ex DC.

Phenology: April-September

Terrestrial or mesophytic; herb; erect; aromatic; 20 cm to 60 cm tall; Stem terete, hairy; Leaves simple, alternate, sessile, glandialr, pubescent, 1.5-6 X 2-4 cm, obovate, obtuse apex, auriculate base, serrate margin; Inflorescence racemose; Head heterogamous, solitary, rayed; Involucral bracts 2 seriate,

lanceolate; Receptacle convex; Ray florets female, purplish, disc florets bisexual, yellow; Achenes of ray florets obovoid, disc florets terete; Pappus white setae.

9. Launaea Cass.
Launaea intybacea (Jacq.) Beauverd
Synonyms: Lactuca intybacea Jacq. ex Murray
Common name: bitter lettuce
Phenology: September-August
Terrestrial or mesophytic; herb; erect; 25 cm to 110 cm tall; Stem simple, glabrous; Leaves simple, 1.5-30 X 1-12 cm, lower leaves ovate to oblanceolate, upper leaves lanceolate, sessile, margin deeply or shallowly toothed; Inflorescence racemose; Head homogamous, solitary or cluster, yellow; Achenes dimorphic, 4-5 mm long, less cylindrical; Pappus white bristles.

10. Oligochaeta K.Koch
Oligochaeta divaricata K.Koch
Synonyms: Amberboa ramosa (Roxb.) Jafri
Common name: Branched Sweet-Sultan
Phenology: April-December
Terrestrial; herb; erect; 10 cm to 40 cm tall; Stem branched, angled, hard, hairy; Leaves simple, sessile, alternate, oblong to obovate, entire, toothed, 1.5-6 X 0.5-2 cm, margin with short sharp point, powdery and gland dotted; Inflorescence recemose; Head solitary, homogamous; Involucral bracts 5 seriate, ovate-elliptic, apex spinescent, dorsally white tomntose; Receptacle flat; Florets 23, tubular,1.4 cm long, purple, 5 lobed, 5 stamens; Achenes angled, glabrous; Pappus multiseriate, silvery brown.

11. Parthenium L.
Parthenium hysterophorus L.
Synonyms: Echetrosis pentasperma Phil.
Common name: Carrot Grass
Kannada name: Congress gida (ಕಾಂಗ್ರೆಸ್ ಗಿಡ)
Phenology: Throughout the year
Terrestrial or mesophytic; herb; erect; 12 cm to 137 cm tall; Stem branched, hairy; Leaves compound, alternate, sessile, bipinnatifid, 1-7 X 2-12 cm, lanceolate to linear; Inflorescence panicle; Head many, radiate, heterogamous; Involucral bracts biseriate, outer lance-elliptic, inner ovate; Florets white, ray florets 5, disc florets many; Achenes flattened; Pappus reflexed awns.

12. Pseudoconyza Cuatrec.
Pseudoconyza viscosa (Mill.) D'Arcy
Synonyms: Blumea viscosa (Mill.) V.M.Badillo
Common name: Sticky Blume
Phenology: November-December
Terrestrial or mesophytic; herb; erect; 10 cm to 82 cm tall; aromatic; Stem terete, branched at base, pubescent with short stipitate glands; Leaves alternate, sessile, oblanceolate-ovate to obovate, 0.2-3.5 X 1-11.5 cm, villous on both surface, base cuneate to attenuate, apex rounded to acute, margin serrate;

Inflorescence terminal corymbos; Head heterogamous; Involucral bracts 4 seriate, linear-lanceolate, pubescent; Florets pinkish, ray florets female, disc florets bisexual; Achenes ribbed, brown; Pappus white.

13. Pulicaria Gaertn.
Pulicaria angustifolia DC.
Synonyms: Pulicaria indica Jaub. & Spach
Phenology: August-October
Terrestrial; herb; erect; 10 cm to 40 cm tall; Stem terete, hairy, branched; Leaves simple, alternate, sessile, hairy on both side, 0.1-0.9 X 0.8-3 cm, oblanceolate or oblong, apex acute, base hastate, margin serrate; Inflorescence racemose; Head heterogamous, solitary, rayed, pedancled; Involucral bracts 4 seriate, all same size, outer linear-oblong, foliaceous, hairy; Receptacle convex; Ray florets female, 13-17, 3 lobed, disc florets bisexual, many, 5 lobed; Achenes oblong, ribbed, hairy; Pappus biseriate.

14. Sonchus L.
Sonchus oleraceus L.
Synonyms: Sonchus angustissimus Hook.f.
Common name: Milk thistle
Kannada name: Naayi hakkarike (ನಾಯಿಹಕ್ಕರಿಕೆ)
Phenology: February-March
Terrestrial or mesophytic; herb; erect; 20 cm to 100 cm tall; sap milky; Stem terete, hollow, branched; Leaves simple, narrow, Wavy, lobed, 2.5-6 X 10.5-16 cm, obovate to oblanceolate, apec acute, base amplexicaule; Inflorescence panicle; Head homogamous; Involucral bracts 3 seriate, oblong, acuminate apex; florets ligulate, yellow, fertil; Achenes flattened, ribbed; Pappus white, dimorphic.

15. Tricholepis DC.
Tricholepis radicans DC.
Synonyms: Carduus radicans Roxb.
Common name: Peninsular Camel Thistle
Kannada name: Mundagoose (ಮುಂಡಗೂಸೆ)
Phenology: August-January
Terrestrial; herb; erect; 20 cm to 110 cm tall; Stem branched, terete; Leaves simple, alternate, sessile, 0.5-1.5 X 2-6 cm, apex acute, base obtuse, margin toothed, spiny; Inflorescence recemose, Head solitary, homogamous; Involucral bracts 8 seriate, 0.1 X 0.8 cm, apex spiny, outer narrow, inner broader; Receptacle bristly; Florets purple; Achenes oblong; Pappus hairs many, denticulate.

16. Tridax L.
Tridax procumbens L.
Synonyms: Chrysanthemum procumbens (L.) Sesse & Moc.
Common name: Coat Buttons
Kannada name: Attige soppu (ಅಟ್ಟಿಗೆ ಸೊಪ್ಪು)
Phenology: Throughout the year

Terrestrial or mesophytic; herb; decumbent; 10 cm to 32 cm tall; Stem procumbent, terete, hairy, branched, Spreading 15 cm to 60 cm; Leaves simple, opposite, 1-2.5 X 3-7 cm, Ovate, apex acute, base cuneate, margin serrate, 3 lobed; Inflorescence recemose; Head solitary, heterogamous; Involucral bracts 3 seriate, hispid; Ray florets ligulate, female, 3 toothed, disc florets tubular, bisexual, 5 lobed, yellow; Achenes oblong, brown, hairy; Pappus many, setaceous.

17. Vicoa Cass.
Vicoa indica DC.
Synonyms: Pentanema indicum (L.) Y.Ling
Common name: Sonkadi
Kannada name: Sonaakhadi (ಸೋನಾಖಡಿ)
Phenology: February-April
Terrestrial; herb; erect; 4 cm to 15 cm tall; Stem terete, branched, pubescent; Leaves simple, sessile, alternate, 0.1-0.8 X 0.8-2.5 cm, oblong-lanceolate, white tomentose, apex acute, base hastate, margin entire; Inflorescence racemose; Head solitary, pedunculate, heterogamous; Involucral bracts 4 seriate, herbaceous; Recepticle hemispheric; Florets yellow, ray florets 1 seriate, disc florets many; Achenes terete, pubescent; Pappus yellow.

18. Xanthium L.
Xanthium strumarium L.
Synonyms: Xanthium indicum var. indicum
Common name: Broad bur
Kannada name: Maruluummatti (ಮರುಳೂಮ್ಮತ್ತಿ)
Phenology: August-October
Terrestrial; herb; erect; 10 cm to 200 cm tall; Stem terete, branched, hispid; Leaves simple, alternate, petiolate, lobed, 2-15 X 4-13 cm, ovate-deltate, scabrid on both side, apex acute, base corda te, margin dentate; Head monoecious, male head upper axils, female head lower axils; Male head involucral bracts 1 seriate; Florets white, tubular; Female head involucral bracts 1 seriate, oblong-lanceolate; Burs sessile, oblong, punerlent, 2 beaked.

Few Medicinal Reports of Wild Stars of VSK University Campus Ballari
From traditionally most of the Asteraceae species are potentially plays important role in medicine. The cultivation of Asteraceae species for medicinal purpose has been started more than 35 thousand years ago because the members of Asteraceae family have more therapeutic application viz., Anti-inflammatory, Antimicrobial, antioxidant, hepatoprotective properties, diuretic and wound healing properties and etc.
Acanthospermum hispidum whole plant alkaloid extraction have Antiplasmodial activity; methanol extxact of whole plant have pharmacological against diarrhea; the petroleum ether, chloroform, hydro alcohol extract of whole plant have Anthelmintic activity (Pawar Sonali et al., 2021). **Ageratum conyzoides** whole plant Ethylacetate extraction exhibited remarkable cytotoxic activity on A-549 cancer cells and P-388 cancer cells (Baral et al., 2022).
Blumea axillaris stem and root extracts synthesized selenium nanoparticles have antimicrobial properties (Jyoti Prakash Dash et al., 2022). **Blumea lacera** ethanolic extracts have anthelmintic

properties; methanolic extracts have antidiabetic properties; water extract have antiviral properties (Hira Moid et al., 2023). The bithienyl acetylens compound isolated from **Blumea obliqua** which have antifungal properties (V U Ahmad, et al., 1995).

Cyanthillium cinereum leaves methanolic extracts have antioxidant and antitumor potentials due to the presence of phenolic and other secondary metabolites (Michael C et al., 2022). **Dicoma tomentosa** whole plant petroleum ether, hexane, dichloromethane, diethylether, ethylacetate, methanol, ethanol/water extract have anti-plasmodial properties (Olivia Jansen et al., 2012). **Echinops echinatus** whole plant 70% ethanol extract have antifungal properties against Aspergillus ssp. and Candida albicans. (Faheem Hadi et al., 2022). **Eclipta prostrate** whole plant Aqueous extract used in Neuroprotective activity, Analgenic activity; alcoholic extraction used in Hyopolipidemic activity; methanol extract of leaf used in antidiabetic activity (Khairullah A R, et al., 2022).

Erigeron bonariensis has been used to treat variety of respiratory diseases respiratory tract infection and cought related asthma (Martina sutovska, 2022). **Parthenium hysterophorus** flowers methanolic extracts have antitumour and cytotoxic properties against T cell leukaemia, HL-60 and Hela cancer cell lines (Seema patel, 2011). **Pseudoconyza viscose** leaf, whole plant, olatile oil, aerial part have antibacterial properties; essential oil extraction is used in the treatment of cancer (Saadatu Muhammad et al., 2022).

Tridax procumbens methanolic extraction have antifungal, antibacterial properties, ethyl acetate extraction have antioxidant, anti-inflammatory properties, flower acetone extract have have anti-cancer properties, ethanol extract have hepatoprotective properties (Debolina Dattaray, 2022). **Vicoa indica** whole plant extraction are used as antifertility agents (Vidyashree S, et al., 2022). **Xanthium strumarium** root, stem, leaves, and seed are used to treat the diseases like salivation, leucoderma, malaria, epilepsy, constipation, diarrhea, bacterial and fungal infections, etc. (Mazumder T Z, et al., 2022).

Soil is the upper layer of earth, in which plants grow. Soil which is consisting of a mixture of organic matter, minerals, micro & macro nutrients, etc,. Soil is a major source or component for growth & development of plant. For healthy growth and development of the plants require soil pH range in between 5.5-6.5 (Levini A, et al., 2020), with less salinity level. Nitrogen help in the preparation of amino acids, nucleic acids, nucleotides and chlorophyll in plants. Phosphorus encourages root growth, promotes flowering. Potassium helps in providing strength to the plants and disease resistant. Calcium regulates of cell wall rigidity and stabilizes cell membranes and cell elongation in both shoots and roots (Burstrom, 1968).

The soil pH of the VSKU Campus have high rate of alkalinity (8.53-8.66) with moderate salinity, in this regard the campus soil is less suitable for healthy growth and development of plants, except Prosopis juliflora because it is most salt tolerant species and have capability to improve the nutrient status of the soil (Mishra et al., 2004). In addition to this many plants are growing healthy may be due to adaptation or high content of Potassium 341.40 Kg/hectare and 163.40 Kg/hectare followed by nitrogen and phosphorus and calcium with 30 & 20 M.E/100gms.

Soil with high alkalinity are suitable for plants like Geraniums, Lavender, Campanula, Ceanothus, Dianthus and Crops like Mustard, Maize, Green Gram, Red Gram, Sunflower, Sesame, Barley, Cotton, Sugar beet, Sugarcane, Rice, Linseed, Sorghum, Bajra. Vegetables like Brijal, Cabbaage, Cauliflower, Okra, Onion, Peas, Tomato, Potato (Ganeshamurthy et al., 2016).

CONCLUSION:

The present study focused on the family Asteraceae (STAR) of VSK University, Ballari, Karnataka state, reveals that 22 species under 18 genera are collected and identified. of which Acanthospermum hispidum, Ageratum conyzoides, Blumea axillaris, Blumea lacera, Blumea obliqua, Cyanthillium cinereum, Dicoma tomentosa, Echinops echinatus, Eclipta prostrate, Erigeron bonariensis, Parthenium hysterophorus, Pseudoconyza viscose, Tridax procumbens, Vicoa indica, and Xanthium strumarium are have medicinal values. This study brings awareness among local peoples to save the species for future generation and also provides good information for students, taxonomists, researchers and local ethnobotanists.

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