Natural products have played an important role throughout the world in treating and preventing human diseases. Natural product medicines have come from various source materials including terrestrial plants, terrestrial microorganisms, marine organisms, and terrestrial vertebrates and invertebrates. Ayurveda is the most ancient health care system and is practiced widely in India, Srilanka and other countries. Atharvaveda (around 1200 BC), Charak Samhita and Sushrut Samhita (1000 - 500 BC) are the main classics that given detailed descriptions of over 700 herbs. In the western world documentation of use of Natural substances for medicinal purposes can be found as far back as 78 A.D., when Dioscorides wrote “De Materia Medica”, describing thousands of medicinal plants. This treatise included descriptions of many medicinal plants that remain important in modern medicine, not because they continue to be used as crude drug preparations, but because they serve as the source of important pure chemicals that have become mainstays of modern therapy. Currently, with over 400,000 registered Ayurveda practitioners, the Government of India has formal structures to regulate issues related to quality, safety, efficacy and practice of herbal medicine. Presently there have been increased waves of interest in the field of Research in Natural Products Chemistry. This level of interest can be attributed to several factors, including unmet therapeutic needs, the remarkable diversity of both chemical structure and biological activities of naturally occurring secondary metabolites, the utility of novel bioactive natural products as biochemical probes, the development of novel and sensitive techniques to detect biologically active natural products, improved techniques to isolate, purify, and structurally characterize these active constituents and advances in solving the demand for supply of complex natural products.

The Research & Development thrust in the pharmaceutical sectors focused on development of new innovative/indigenous plant based drugs through investigation of leads from the traditional system of medicine. The large quantity of natural products in drug discovery has stemmed from the diverse structures and the intricate carbon
skeletons of natural products. Since secondary metabolites from natural sources have been elaborated within living systems, they are often perceived as showing more drug likeness and biological friendliness than totally synthetic molecules.

Presently developed countries are turning to the use of traditional medicinal systems that involve the use of herbal drugs and remedies. According to the World Health Organization (WHO), 65% of the world’s population has incorporated the value of plants as methodology of medicinal agents into their primary modality of health care. Natural products isolated from plants will still remain an essential component in the search for new medicines. Proper utilization of these resources and tools in bio prospecting will certainly help in discovering novel lead molecules from plants by employing modern drug discovery techniques.

Recently World Health Organization (WHO) has defined traditional medicine (including herbal drugs) as comprising therapeutic practices that have been in existence, for hundreds of years, before the development and spread of modern medicine and are still in use today. The traditional preparations comprise medicinal plants, minerals, organic matter, etc. Herbal drugs constitute only those traditional medicines which primarily use medicinal plant preparations for therapy.

**FLAVONOIDS-THE NATURAL PRODUCTS POTENTIAL**

Natural products are naturally derived metabolites from microorganisms, plants, or animals. These products have been exploited for human use for thousands of years and plants have been the chief source of compounds used for medicine. Traditional Chinese medicine is used for medicines as well as in daily dietary supplements in Asia. Today the largest users of traditional medicines are the Chinese, with more than 5,000 plants and plant products in their pharmacopoeia. Recently a
study by the World Health Organization (WHO) has shown that about 80% of the world's population still relies on traditional medicine. These natural products play an important role in the medicine of the remaining 20% of the world’s population. Flavonoids comprise a large group of secondary metabolites widely distributed throughout the plant kingdom, including food plants. The daily flavonoid intake in the human diet (mainly from onions, apples, grapes, wine, tea, berries, herbs and spices) is highly variable, with ranging from 23 mg to more than 500 mg. Epidemiological studies including over 120,000 patients have shown an inverse association between dietary flavonoid intake and mortality from coronary heart disease.

Flavonoids also display antioxidant activity that confers beneficial effects on coronary heart disease, cancer, and allergies. Some of the biological effects of anthocyanins and flavonols may be related to their ability to modulate mammalian cell signalling pathways. Enhancing the production of flavonoids in crop plants can therefore give an important boost to their nutritional values. Due to their attractive colours, flavones, flavonols and anthocyanidins may act as visual signals for pollinating insects. Flavonoids act as catalysts in the light phase of photosynthesis and/or as regulators of iron channels involved in phosphorylation. Flavonoids protect plants from UV radiation of sun and scavenge UV-generated ROS (reactive oxygen species). Fruits and vegetables do play a preventive role, which is due to a variety of constituents including vitamins, minerable that flavonoids contribute to the prospective effect of fruits and vegetables.

A large number of flavonoids isolated from the plants have been shown to have Antimicrobial, Cytotoxic, Antimitotic, Antiviral, Antitumor activities. Various new bioactive compounds have been isolated by Dr. R. N. Yadava and his co-workers.
Thus advancement in chemical and biological sciences along with highly sophisticated methods like paper chromatography\textsuperscript{37-38}, column chromatography\textsuperscript{39} thin layer chromatography\textsuperscript{40-41}, HPLC\textsuperscript{42} and techniques like UV\textsuperscript{43-44}, IR\textsuperscript{45-46}, \textsuperscript{1}H-NMR\textsuperscript{47-49}, \textsuperscript{13}C-NMR\textsuperscript{50,51} and Mass\textsuperscript{52}, made it possible for isolation and characterization of the therapeutically active compounds from medicinal plants. Recently some important bioactive components have been isolated from medicinal plants which are recorded in following Table-I.
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Plant</th>
<th>Isolated Compound</th>
<th>Therapeutic importance</th>
<th>Str. No.</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Cotoneaster acuminatus</em> vern.</td>
<td>3β, 7, 3'-trihydroxy-4'-methyl flavan 5-O-β-D-glucopyranoside and 3',4'-dihydroxy-6-methyl-7-O-α-L-rhamnopyranoside</td>
<td>Antimicrobial activity</td>
<td>1-2</td>
<td>53</td>
</tr>
<tr>
<td>2</td>
<td><em>Trichosanthes kirilowii</em></td>
<td>5, 7, 2', 4'-tetrahydroxy-5'-methoxy flavone, 5, 7, 4'-trihydroxy-3', 5'-dimethoxy flavone</td>
<td>Cytotoxicity</td>
<td>3-4</td>
<td>54</td>
</tr>
<tr>
<td>3</td>
<td><em>Clematis rehderiana</em></td>
<td>Isovitexin 6''-O-E-p-coumarate, Quercetin-3-O-β-D-glucuronopyranoside, Isoorientin</td>
<td>Biological activity</td>
<td>5-7</td>
<td>55</td>
</tr>
<tr>
<td>4</td>
<td><em>Abrus precatorius</em> (Linn)</td>
<td>7, 3', 5'-trimethoxy-4'-hydroxy flavone-3-O-β-D-galactosyl-(1→4)-α-L-xyloside.</td>
<td>Antimicrobial activity</td>
<td>8</td>
<td>56</td>
</tr>
<tr>
<td>5</td>
<td><em>Caesalpinia crista</em> Linn.</td>
<td>3, 5, 7, 3', 4'-pentahydroxy flavanone-3-O-β-D-xylpyranosyl-7-O-α-L-arabinopyranosyl-(1→3)-O-α-L-rhamnopyranoside, 4'-hydroxy-5, 7-dimethoxy flavone-4'-O-β-D-xylpyranosyl-(1→3)-O-β-D-glucopyranosyl-(1→4)-O-α-L-rhamnopyranoside, 5, 2'-dihydroxy-6, 7-dimethoxy isoflavone and 3, 5, 7, 3', 4', 5'-hexahydroxy flavone.</td>
<td>Antimicrobial activity</td>
<td>9-14</td>
<td>57</td>
</tr>
<tr>
<td>6</td>
<td><em>Cheilanthes dalhousiae</em> (Hook)</td>
<td>Quercetin-3-methylether-5-O-glycoside, kaempferol-5-O-(6''-O-malonyl) glycoside.</td>
<td>Antibacterial activity</td>
<td>15-16</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Scientific Name</td>
<td>Chemical Constituents</td>
<td>Biological Activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><em>Elsholtzia rugulosa</em> Hemsl.</td>
<td>Apigenin 4'-O-α-D-glucopyranoside, 5, 7, 3', 4'-tetrahydroxy-5'-C-prenylflavone-7-O-β-D-glucopyranoside.</td>
<td>Antiviral activity 17-18 59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><em>Artemisia dracunculis</em> L.</td>
<td>6-demethoxycapillarisin, 2',4'-dihydroxy-4-methoxy dihydrochalcone.</td>
<td>Antihyperglycemic activity 19-20 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><em>Anaxagorea luzonensis</em> A. Gray</td>
<td>1, 3, 6-trihydroxy-5-methoxy-4-prenylxanthone, 1, 3, 5 - trihydroxy-6-methoxy-2-prenylxanthone, 1, 3, 5-trihydroxy-4-(3-hydroxy-3-methylbutyl) xanthone, 1, 3, 6-trihydroxy-4-prenylxanthone, 3,6-dihydroxy-1, 5-dimethoxyxanthone, 3, 5, 7, 4'-tetrahydroxy-2'-methoxyflavone.</td>
<td>Antioxidative activity 21-26 61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><em>Caesalpinia pyramidalis</em> Tul.</td>
<td>Loniflavone, amentoflavone, 5'-hydroxyamentoflavone, besides agathisflavone, podocarpusflavone A, taxifolin, seqoiaflavone.</td>
<td>Biological activity 27-33 62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><em>Hypericum japonicum</em> Thunb.</td>
<td>Quercetin, quercitrin (quercetin 3-O-L-rhamnoside), quercetin 7-O-L-rhamnoside, isoquercitrin (quercetin 3-O-β-D-glucoside), dihydrokaempferol, dihydroquercetin and 3, 5, 7, 3', 5' pentahydroxy- dihydroflavonol.</td>
<td>Antihypoxic activity 34-40 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><em>Halostachys caspica</em></td>
<td>Luteolin, chrysin , chrysin 7-O-β-D-glucopyranoside, quercetin, quercetin 3-O-β-D-glucopyranoside, isorhamentin-3-O-β-D-glucopyranoside and isorhamentin-3-O-β-D-rutinoside.</td>
<td>Antimicrobial activity; Antioxidant activity 41-47 64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Species</td>
<td>Constituents</td>
<td>Activity</td>
<td>Range</td>
<td>Year</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>13</td>
<td><em>Bauhinia monandra</em> (Kurz)</td>
<td>Quercetin-3-O-rutinoside, Quercetin.</td>
<td>Antioxidant activity</td>
<td>48-49</td>
<td>65</td>
</tr>
<tr>
<td>14</td>
<td><em>Persea Americana</em> Mill.</td>
<td>Isorhamnetin, luteolin, rutin, quercetin, apigenin.</td>
<td>Antioxidant activity</td>
<td>50-54</td>
<td>66</td>
</tr>
<tr>
<td>15</td>
<td><em>Epimedium koreamum</em> Nakai</td>
<td>Epimedokoreanoside I, Icariin, Icariside II.</td>
<td>Anticancer, anti-AIDS, antibacterial,</td>
<td>55-57</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>antiphlogistic, antitussive.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Trollius ledebouri</em> Reichb.</td>
<td>Orientin, vitexin, quercetin-3-O-neohesperidoside</td>
<td>Antiviral, antimicrobial, antioxidant</td>
<td>58-60</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and radioprotection activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td><em>Alphitonia philippinensis</em></td>
<td>Isorhamnetin-3-O-(6″-O-(Z)-p-coumaroyl)-β-D-glucopyranoside, quercetin-3-O-α-L-rhamnopyranosyl(1→2)-α-L-arabinopyranosyl(1→2)-α-L-rhamnopyranoside, quercetin-3-O-α-L-arabinopyranosyl(1→2)-α-L-rhamnopyranoside, isorhamnetin 3-O-β-D-glucopyranoside, quercetin-3-O-β-D-glucopyranoside and quercetin-3-O-α-L-rhamnopyranoside.</td>
<td>Cytotoxicity, Antiviral, Antiherpes virus.</td>
<td>61-66</td>
<td>69</td>
</tr>
<tr>
<td>18</td>
<td><em>Teucrium persicum</em> boiss</td>
<td>5-hydroxy-3, 7, 4′-trimethoxy flavone, 5-hydroxy-7, 3′, 4′-trimethoxy flavone,</td>
<td>Antioxidant activity</td>
<td>67-68</td>
<td>70</td>
</tr>
</tbody>
</table>
5 $R_1=H, R_2=E$-p-coumaroyl
6 $R_1=OH, R_2=H$
\[ R_1 = R_2 = R_3 = \text{OMe} \]
\[ R_4 = \text{H} \]
31

32 $R_1=H; \ R_2=CH_3$

33 $R_1=CH_3; \ R_2=H$

34

35

36

37
41 R₁=H, R₂=R₃=R₄=OH
42 R₁=R₃=R₄=H, R₂=OH
43 R₁=R₃=R₄=H, R₂=7-O-β-D-glc
44 R₁=R₂=R₃=OH
45 R₁=3-O-β-D-glc, R₂=R₃=R₄=OCH₃
46 R₁=3-O-β-D-glc, R₂=R₄=OH, R₃=OCH₃
47 R₁=3-O-β-D-rutinose, R₂=R₄=OH, R₃=OCH₃

48 R=rutinosyl
49 R=H
50 $R=R_2-R_3=O\text{H}$
51 $R=O$-glucose, $R_2=R_3=O\text{H}$
52 $R=H, R_2=R_3=O\text{H}$
53 $R=R_3=O\text{H}, R_2=O\text{CH}_3$
54 $R=R_2=H, R_3=O\text{H}$

58

59

60
61 $R_1 = \text{CH}_3$, $R_2 = \text{O}$

62 $R_1 = \text{H}$, $R_2 = \text{O}$

63 $R_1 = \text{H}$, same as 2, $R_2 = \text{O}$

64 $R_1 = \text{CH}_3$, $R_2 = \beta$-D-Glc

65 $R_1 = \text{H}$, $R_2 = \beta$-D-Glc

66 $R_1 = \text{H}$, $R_2 = \alpha$-L-Rha

67

68
Thus a large number of bioactive components have been isolated from various plants but still a large number of plants are left for their systematic phytochemical examinations. Therefore, authoress took up the challenging task of phytochemical examination of some Compositae plants.

ABOUT THE COMPOSITAE FAMILY

Compositae is the largest family of flowering plants. It is spread over 950 genera and 20,000 species (Lawrence). Willis (1966) considered only 900 genera and 13,000 species, whereas according to Cronquist the number of species included in this family is 19,000. The family contains more than 10 per cent of the total number of flowering plants. In India the family is represented by about 700 species.

The plants are widely distributed and cosmopolitan occurring in almost all habitats. They are most abundant in the tropical and temperate lands but are also found in the arctic and alpine regions. Apart from mesophytes, some occur as xerophytes, aquatic or marsh plants and epiphytes.

In India the plants occur in all possible climates and places but are less common in areas under rain forests. They grow both in hills and plains and play an important role in the vegetation.

The Compositae family is especially rich in flavonoidal constituents. Some recent work has been reported from Compositae plants by earlier workers which are recorded in Table-II.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Plant</th>
<th>Parts of plant</th>
<th>Isolated Compounds</th>
<th>Str. No.</th>
<th>Ref. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Sphaeranthus indicus</em> L.</td>
<td>Aerial parts</td>
<td>5-hydroxy-7-methoxy-6-C-glycosyl flavone.</td>
<td>69</td>
<td>71</td>
</tr>
<tr>
<td>2</td>
<td><em>Baccharis trimera</em> (Less)</td>
<td>Aerial parts</td>
<td>5, 6-dihydroxy-7, 3', 4'-trimethoxy flavone.</td>
<td>70</td>
<td>72</td>
</tr>
<tr>
<td>3</td>
<td><em>Eclipta alba</em> Hassk</td>
<td>Aerial parts</td>
<td>Wedelolactone, Demethylwedelolactone, stigmasterol, α-terthienymethanol, Desmethyl-wedelolactone-7-glucoside, apigenin, luteolin, 25-β-hydroxyverazine, ecliptine, nicotine, 5I-senecioxyloxy-methylene-2-(4-isovaleryloxybut-3-ynyl)-dithiophene, 5I –tigloyloxy-methylene-2-(isovaleryloxybut-3-ynyl)-dithiophen, 2-(3-acetoxy-4-chloro-but-1-ynyl)-5-(pent-1,3-diynyl)thiophene, hentriacontanol, stigmasterol, ecliptal, 14-heptacosanol, L terthienyl methanol, β-amyrin, luteolin-7-O-glucoside, phytosterol, β-amyrin, luteolin-7-glucoside.</td>
<td>71-73</td>
<td>73</td>
</tr>
<tr>
<td>4</td>
<td><em>Tanacetum parthenium</em>(L.)</td>
<td>Aerial parts</td>
<td>Flavonol, Kaempferol, Fisetin and Naringenin.</td>
<td>74-77</td>
<td>74</td>
</tr>
<tr>
<td>5</td>
<td><em>Artemisia rupestris</em> L.</td>
<td>Aerial parts</td>
<td>6- demethoxy- 4'-O-methylcapillarisin,6-demethoxy- 4'-O-methyl capillarisin-7-O-β-glucoside.</td>
<td>78-79</td>
<td>75</td>
</tr>
<tr>
<td>6</td>
<td><em>Picris echoides</em></td>
<td>Aerial parts</td>
<td>Apigenin, cosmosiin, 3, 4', 5, 6, 7-pentahydroxy flavone and 4, 4', 6, 7-tetrahydroxy aurone.</td>
<td>80-83</td>
<td>76</td>
</tr>
<tr>
<td>7</td>
<td><em>Saussurea triangulata</em></td>
<td>Aerial parts</td>
<td>7,4'-di-O-methyl-apigenin-5-O-α-D-xylopyranosyl-(1→6)-β-D-glucopyranoside and 7-O-methylapigenin-5-O-α-D-xylopyranosyl-(1→6)-β-D-glucopyranoside.</td>
<td>84-85</td>
<td>77</td>
</tr>
<tr>
<td>8</td>
<td><em>Hieracium pilosella</em> L.</td>
<td>Aerial parts</td>
<td>Luteolin, Apigenin, kaempferol-3-methyl ether, isoeotin-7- O-β-glucopyranoside, isoeotin- 4'- O-β-glucopyranoside, luteolin -7-O-β-glucopyranoside, luteolin -4'- O-β-glucopyranoside, apigenin-7- O-β-glucopyranoside, esculetin -7- O-β-glucopyranoside and umbelliferone -7- O-β-glucopyranoside.</td>
<td>86-95</td>
<td>78</td>
</tr>
</tbody>
</table>
Thus survey of literature reveals that there is still enough scope for further systematic phytochemical examinations of following Compositae plants.

1. *Emilia sonchifolia* DC.


4. *Lactuca sativa* Linn.

**1. EMILIA SONCHIFOLIA DC.**

It is commonly known as "**Hiranakhuri**" in Hindi. It is a glabrous scabrid or puberulous slender herb, 30-40 cm. high, erect or diffuse, leaves variable; the lower petioled, lyrate or obovate, toothed or entire; the cauline more or less amplexicaul and auricled, usually acute, less commonly abortive at the apex. Heads few, reaching 1.3 cm. long, laxly corymbose, without bracteoles beneath the head; flowers purplish; peduncles very slender, nodding when young, glabrous. Involucres cylindric, glabrous or puberulous towards the top; bracts almost equalling the corollas, linear-oblong, acute, with scarious margins. Style-arms ½-cylindric, tips conic. Pappus copious, white, soft, nearly equalling the involucral bracts. Achenes 3mm. long, narrowly oblong 5-ribbed, brown, scabrid on the ribs.

**DISTRIBUTION**

It is found throughout in India, Ceylon and most tropical and subtropical regions.

**MEDICINAL IMPORTANCE**

The plant is sudorific. A decoction of it is used as febrifuge in infantile tympanites and in bowel complaints. Its root is used for diarrhoea. The juice of fresh leaves is used for sore ears, sore eyes and night-blindness. The plant is also used for cuts and wounds. The plant is used as an astringent and anti-asthmatic.
2. **VERNONIA CINEREA LESS.**

   It is commonly known as “Sahadevi” in Hindi. It is an annual, erect, 15-75cm. high, stem stiff, cylindric, striate, more or less pubescent, slightly branched. Leaves petioled, 2.5-5 by 2-3.8cm the upper leaves, variable in shape, broadly-elliptic or lanceolate, obtuse or acute, shortly mucronate, more or less pubescent on both sides, irregularly toothed or shallowly create-serrate, petioles variable, 6-13 mm long. Heads small, about 20-flowered, 6mm. diameter, in lax divaricate terminal corymbs, with a minute linear bract beneath each head of flowers and with small bracts in the forks of the peduncles. Its flowers are pinkish violet. In-volucral bract linear-lanceolate, awned, silky on the back. Its pappus is white, the exterior row short, about 0.5mm long. Achenes 1.2 mm long oblong, slightly narrowed at the base, clothed with appressed white hairs.

**DISTRIBUTION**

   It is found throughout in India, Tropical Africa, Asia and Australia.

**MEDICINAL IMPORTANCE**

   The flower are used for the treatment conjunctivitis. The plant is sweet, cold, tonic, stomachic, astringent. It cures, "tridosha", asthma and bronchitis. The flower cure fevers. Its seeds are used as an alexipharmic and anthelmintic. The whole plant is given as a remedy for spasm of the bladder and strangury.

3. **TUSSILAGO FARFARA LINN.**

   It is commonly known as "Watapan" in Hindi. It is a white, woolly, scapigerous herb, with a perennial rootstock. Its leaves are long-petioled, all radical, common after the flowers, orbicular, cordate, toothed, 7.5-25cm. broad, cobwebby, above, white tomentose beneath. Scapes 1 or more, 10-25cm., tomentose. Its heads are heterogonous, radiate, bright yellow, drooping in bud, 2.5-3.8cm. diameter. Its ray-flowers are female, multiseriate, fertile ligule narrow, spreading. Its disk-flowers
are hermaphrodite, sterile, tubular, limb elongate, 5-fid. Involucre companulate or cylindric; bracts I-seriate, equal, with a few very small outer ones. Receptacle flat, naked. Anther-bases entire or subauricled. Style-arms of hermaphrodite flowers entire obtuse. Achenes of female flowers linear, 5-10-ribbed, with slender rough pappus hair; of hermaphrodite flowers slender, empty, pappus scanty.

**DISTRIBUTION**

It is found throughout in India, North and West Asia, North Africa and native of Europe.

**MEDICINAL IMPORTANCE**

Its roots and leaves are used in chronic bronchitis, asthma, chest complaints, inflammations. Its leaves are used for smoked like tobacco, as a domestie remedy for asthma. Its leaves are being used for smoking and recommends both roots and leaves as a remedy for obstinate colds and coughs. The flower are used as an expectorant in cough, asthma, apoplexy, and phthisis. The leaves are believed to possess demulcent, diuretic, expectorant and sudorific properties, and are used in colds, coughs and asthma. They are also used in treatment of dyspepsia, diarrhoea, rheumatism and nervous disorders.

4. *LACTUCA SATIVA LINN.*

It is commonly known as "Kahu" in Hindi. It is an erect, glabrous, herbaceous annual, 0.5-1.2m. high, widely grown for its crisp, edible, highly developed radical leaves, which appear before the flowering starts. Leaves 12.5-25.0 cm. long, thin, nearly orbicular, oblong, obovate or lingulate, plane, bullate or curled; flower heads of yellow rays, borne on panicles; achenes lenticular-oblong, dark brown or greyish brown, with slender beak and white pappus.

**DISTRIBUTION**

It is found throughout in India, Portugal, Holland, Hungary and Spain.
MEDICINAL IMPORTANCE

Its leaves are used as cattle feed. It is used as hypnotic in bronchitis and asthma. The plant is sedative and the dried milk of the cultivated forms is used as a calmant. The seeds are emollient. The inspissated milky juice of the wild forms is used as a substitute for opium.

Earlier workers have isolated several compounds from above plants, which are listed in Table-III.
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Plant</th>
<th>Parts of plant</th>
<th>Isolated Compounds</th>
<th>Str. No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Emilia sonchifolia</em> DC.</td>
<td>Aerial parts</td>
<td>triacontane, n-hexacosanol, ursolic acid and flavons.</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>3.</td>
<td><em>Vernonia cinerea</em> Less.</td>
<td>Flowers</td>
<td>Luteolin, luteolin-7-O-glucoside, isoorientin and chrysoeriol.</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>5.</td>
<td><em>Tussilago farfara</em> Linn.</td>
<td>Leaves and Flower</td>
<td>Senkirkine (0.01%) ferulic, p-hydroxybenzoic, caffeic and caffeoyl tartaric acids, quercetin and its 3-arabinoside and 4'-glucoside, kaempferol, kaempferol-3-arabinoside and kaempferol-3-glucoside, a new pyrrolizidine alkaloid-tussilagine characterized as 1-carboxymethyl-2-hydroxy-2-methylpyrrolizidine.</td>
<td></td>
<td>105</td>
</tr>
<tr>
<td></td>
<td><strong>Tussilago farfara</strong> Linn.</td>
<td>Flower buds</td>
<td>Farfaratin (II) a new terpene</td>
<td>106</td>
<td>90</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>7.</td>
<td><strong>Tussilago farfara</strong> Linn.</td>
<td>Flower buds</td>
<td>6-acetyl-7-hydroxy-2, 3-dimethylchromone and 6-carboxyl-7-hydroxy-2, 3-dimethylchromone.</td>
<td>107-108</td>
<td>91</td>
</tr>
<tr>
<td>8.</td>
<td><strong>Lactuca sativa</strong> Linn.</td>
<td>Seeds</td>
<td>Campesterol, stigmasterol, sitosterol, 5-dehydro avenasterol, stigmaster-7-en-3β-ol and 7-dehydro avenasterol, quercetin-3β-D-glucuronide, quercetin-3β-D-glucoside, quercetin-3-O-malony-β-D-glucoside and luteolin-7-β-D-glucuronide.</td>
<td>109-125</td>
<td>92</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Lactuca sativa</strong> Linn.</td>
<td>Whole plant</td>
<td>Lactucaxanthin.</td>
<td>126</td>
<td>94</td>
</tr>
</tbody>
</table>
lactucin  $R_1=\text{OH} \quad R_2=\text{OH}$

lactucopicrin  $R_1=\text{OH} \quad R_2=\text{OCOCH}_3$-

8-deoxylactucin  $R_1=\text{OH} \quad R_2=\text{H}$

picriside A  $R_1=\text{O-Glucose} \quad R_2=\text{OH}$

crepidiaside A  $R_1=\text{O-Glucose} \quad R_2=\text{H}$

lactucin-15-oxalate  $R_1=\text{OCOCOOH} \quad R_2=\text{OH}$

lactucopicrin-15-oxalate  $R_1=\text{OCOCOOH} \quad R_2=\text{OCOCH}_3$-

8-deoxylactucin-15-oxalate  $R_1=\text{OCOCOOH} \quad R_2=\text{H}$

15-deoxylactucin-8-sulfate  $R_1=\text{H} \quad R_2=\text{SO}_3\text{H}$

15-deoxylactucin  $R_1=\text{H} \quad R_2=\text{OH}$

8-deoxylactucin-15-sulfate  $R_1=\text{H} \quad R_2=\text{SO}_3\text{H} \quad R_2=\text{H}$

15-(4-hydroxyphenylacetyl)-lactucin-8-sulfate  $R_1=\text{OCOCH}_3$-

$R_2=\text{OSO}_3\text{H}$
121 11,13-dihydrolactucopicrin glycoside
122 jacquinellin
123 jacquinellin glycoside

124 lecttunin A

125 2,3,4-tri-((4-hydroxyphenyl-acetyl)-β-glucopyranose

126 Lactucaxanthin
PROBLEM TAKEN AND WORK DONE

Recently various synthetic drugs have been discovered and are used on a large scale but still no system of medicine in the world can claim to have obtained complete expertise in solving all health problems. Still several diseases like AIDS, cancer etc. exists a great concern for the survival of humanity. There are a large number of medicinal plants which have not been investigated thoroughly and hence their curative values have not been yet recognized.

Thus there is urgent need for systematic phytochemical investigation of those indigenous plants which have not been investigated systematically or worked at a time when modern facilities were not available for their potential therapeutic component. Therefore in view of the medicinal importance of Compositae plants, authoress took up the challenging task to examine plants (i) *Emilia sonchifolia* DC. (ii) *Vernonia cinerea* Less. (iii) *Tussilago farfara* Linn. (iv) *Lactuca sativa* Linn., with a view to isolate, purify and identify bioactive flavonoidal constituents present in them and their finding are summarized below.

CHAPTER-2

ISOLATION AND STRUCTURE ELUCIDATION OF A NEW ANTIVIRAL FLAVONOL GLYCOSIDE: 3, 7, 3', 4' -TETRAHYDROXY-FLAVONE-3-O-β-D-XYLOPYRANOSYL-(1→3)-O-β-D-GALACTOPYRANOSYL-(1→4)-O-α-L-RHAMNOPYRANOSIDE, FROM THE SEEDS OF *EMILIA SONCHIFOLIA* DC.

This chapter incorporates the isolation and structural elucidation of a new antiviral flavonol glycoside (OM) (1.45 gm) molecular formula C\textsubscript{32}H\textsubscript{38}O\textsubscript{19}, m. p. 246-248 °C and [M]\textsuperscript{+} 726 (FABMS) obtained from the methanol soluble fraction of the defatted seeds of this plant. Its structure was established as 3, 7, 3', 4' -tetrahydroxy-flavone-3-O-β-D-xylopyranosyl-(1→3)-O-β-D-galactopyranosyl-(1→4)-O-α-L-rhamnoppyranoside on the basis of colour reactions, alkaline degradations and spectral techniques.
CHAPTER-3

ISOLATION AND STRUCTURE ELUCIDATION OF A NEW ANTIVIRAL FLAVONE GLYCOSIDE: 3'-METHOXY- 5, 7, 4'-TRIHYDROXY FLAVONE-4'-O-α-L-RHAMNOPYRANOSYL- (1→4) -O- α- L-ARABINOPYRANOSYL- (1→3)-O-β-D-GALACTOPYRANOSIDE FROM THE ROOTS OF VERNONIA CINEREA LESS.

This chapter deals with the isolation and structural elucidation of a new antiviral flavone glycoside (KR) (1.50 gm) molecular formula C$_{33}$H$_{40}$O$_{19}$, m. p. 263-265 °C, [M]$^+$ 740 (FABMS) obtained from the methanol soluble fraction of the ethanolic extract of the roots of this plant. Its structure was established as 3'-methoxy 5, 7, 4'-tri hydroxy-flavone-4'-O-α-L-rhamnopyranosyl-(1→4)-O-α-L-arabinopyranosyl-(1→3)-O-β-D-galactopyranoside on the basis of colour reactions, alkaline degradations and spectral analysis.
CHAPTER-4

ISOLATION AND STRUCTURE ELUCIDATION OF A NEW FLAVONOL GLYCOSIDE: 3'-METHOXY- 3, 5, 7, 4'-TETRAHYDROXY - FLAVONE-3 - O-β-D-GLUCOPYRANOSYL- (1→3)- O- β- D-XYLOPYRANOSYL-7-O-α- L-RHAMNOPYRANOSIDE FROM THE LEAVES OF TUSILAGO FARFARA LINN.

A new flavonol glycoside (HR) (1.35 gm) molecular formula C_{33}H_{40}O_{20}, m. p. 255-257 °C, [M]^+ 756 (FABMS), isolated from the acetone soluble fraction of the leaves of this plant. Its structure was established as 3'-methoxy- 3, 5, 7, 4'-tetrahydroxy- flavone- 3- O- β-D-glucopyranosyl-(1→3)- O- β- D-xylopyranosyl- 7- O- α -L-rhamnopyranoside on the basis of colour reactions alkaline degradations and spectral techniques.

CHAPTER-5

ISOLATION AND CHARACTERISATION OF A NEW FLAVONE GLYCOSIDE: 3, 6-DIMETHOXY- 5-HYDROXY-FLAVONE- 5 - O- α- L-RHAMNOPYRANOSYL-(1→3)-O-β-D-GLUCOPYRANOSYL-(1→3)-O-β-D-XYLOPYRANOSIDE FROM SEEDS OF LACTUCA SATIVA LINN.

This chapter reports the isolation and structural elucidation of a new flavone glycoside (MR) (1.65 gm) molecular formula molecular formula C_{34}H_{42}O_{18}, m. p. 239-241 °C, [M]^+ 738 (FABMS), obtained from the methanol soluble fraction of the
defatted seeds of this plant. Its structure was established as 3, 6-dimethoxy-5-hydroxy-flavone-5-O-α-L-rhamnopyranosyl-(1→3)-O-β-D-glucopyranosyl-(1→3)-O-β-D-xylopyranoside on the basis of colour reactions, alkaline degradations and spectral techniques.

CHAPTER-6

ANTIVIRAL ACTIVITY OF THE COMPOUNDS ISOLATED FROM PLANTS

This chapter deals with the antiviral activity of the compounds OM, KR, HR and MR against the Japanese Encephalitis Virus (JEV).
REFERENCES


83. The Wealth of India, A Dictionary of Indian Raw Materials and Industrial Products, X(Sp-W), 397, (1982).


