INTRODUCTION
Ehretia laevis (Roxb) and Tecoma stans (L.) H. B. & K.

Ayurvedic Medicinal Plants

Plants have been one of the important sources of medicines since the dawn of human civilization. In spite of tremendous developments in the field of allopathy during the 20th century, plants still remain one of the major sources of drugs in modern as well as traditional systems of medicine throughout the world. These plants are used for their medicinal values by traditional communities. Over three quarters of the world population relies mainly on plants and plant extracts for health care. In developed countries such as United States, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as China and India, the contribution is as much as 80%. In India, drugs of herbal origin have been used in traditional system of medicine such as Unani and Ayurveda since ancient times.

1.1 Ayurveda

The Aryans of the Indus Valley wrote three treatises viz, the Rig-Veda (2000 BC), Atharva-veda (2000-1000 BC) and Ayurveda (100-600 BC) which mention several medicinal plants and their uses. Ayurveda, originated from Artharva Veda and Vedic era is considered to be the time when Ayurveda flourished as a medicinal science. It is estimated that around 1000 B.C., two principle texts of Ayurveda, Charaka Samhita and Sushruta Samhita were composed. Charaka and Sushruta are respected names in the fields of medicine and surgery respectively. Both the texts have dealt in detail with the use of medicinal plants. The knowledge of plants as source of medicine has proved a useful tool in drug discovery.

The history of medicine in India can be traced to very ancient times. Medicinal properties of plants have been mentioned in Rig-Veda. According to western scholars the age of Ayurveda is fixed at about 2500 B.C. to 600 B.C. Charaka, a branch of Ayurveda, which is supposed to have been written about 1000 B.C. deals with medicine.
The Ayurveda system of medicine has used about 700 species. The drugs are derived either from the whole plant or from different parts, like leaves, stem, bark, roots, flowers and seeds. Some drugs are prepared from excretory plant products such as gum, resins and latex.5

1.2 Natural Products and their Efficacy

The natural products commenced approximately 200 years ago, with the purification of morphine from opium. Additional drugs isolated from plant sources in the nineteenth century included atropine, caffeine, cocaine, nicotine, quinine and strychnine, whereas in the twentieth century, digoxin, reserpine, paclitaxel, vincristine, and chemical precursors of the steroid hormones were isolated. In recent years, a more profound understanding has emerged of the chemical and biological aspects of plants used in the traditional medicines. The Asian countries such as China, India, Indonesia; Japan, Latin America and Africa traditionally have used medicinal plants6-9. Many important scientific observations germane to natural product drug discovery6-9.

Natural products may serve to provide molecular inspiration in certain therapeutic areas for which there is only a limited number of synthetic lead compounds. Natural products differ from synthetic products in the average number of halogen, nitrogen, oxygen and sulfur atoms in addition to their steric complexity10. It is considered that natural products and synthetic compounds occupy different regions of “chemical space” hence; they each tend to contribute to the overall chemical diversity required in a drug discovery program11,12.

Naturally occurring substances may serve either as drugs in their native or unmolded form or as “lead” compounds (prototype bioactive molecules) for subsequent semi synthetic or totally synthetic modification - for example, to improve biological efficacy or to enhance solubility10-13. Natural products may serve to provide molecular inspiration in certain therapeutic areas for which there are only a limited number of synthetic lead compounds.
1.3 Need of Active Molecules

Traditional medicines, folk medicines, are still in use in many developing countries such as China, India and Japan etc. Natural product derived drugs includes both naturally occurring substances and synthetically modified compounds based on natural products. Compounds isolated from plants may be employed and/or synthesized like a plant-derived component as a drug. In some cases it may be modified either biologically or chemically, to produce desired drugs of desired efficacy.

1.4 Natural Products from Plants

Plants – the basis for life on earth – are widely used as a source of medicine by human being since ancient times. Most of the people depending on traditional medicine live in developing countries and they rely mainly on traditional herbal medicines to meet their primary healthcare needs. This has lead to a great concern in the scientific community to document medicinal properties of the plants and evaluate them scientifically for their therapeutic efficacy. For this, standardization of herbal materials and isolation of active principle is necessary. Such compounds may help to achieve more efficacies. In nature many specific plants have specific action in human systems. Medicinal plants are used as raw materials for extraction of active constituents in pure form as alkaloids like quinine and quinidine from cinchona bark, emetine from ipecacuanha roots, glycosides from digitalis leaves, sennosides from senna leaves, which are employed as precursors for synthetic drugs like vitamins, steroids and as preparations for herbal and indigenous medicines. In western medicine, in cardiovascular and metabolic diseases, the powdered material of Digitalis purpurea leaves has been employed for more than 200 years. The major active constituent being the cardiac (steroidal) glycoside digitoxin, which is still in use for the treatment of congestive heart failure and atrial fibrillation. A more widely used drug today is digoxin (I), a constituent of Digitalis lanata, which has a rapid action and is more rapidly eliminated from the body than digitoxin. Lanatoside C, a constituent of D. lanata, on
hydrolysis gives deslanoside (deacetyllanatoside C). It is used for
digitalization\(^6\text{--}^9\).

Robberts and coworkers isolated pharmacologically active cardiac glycosides
from seeds of *Mallotus philippines* Mull Arg. The cardenolides obtained are
corotoxigenin L-rhamnoside and coroglaucigenin L- rhamnoside \(^14\). The
cardiac action of *Tribulus terrestris* L. was studied by Seth and et al.\(^15\) They
have reported the cardiac stimulant action of the semi purified water soluble
extract of fruits of *Tribulus terrestris* L. A comprehensive review has appeared
regarding natural products that affect the central nervous system, inclusive of
analgesics, antipsychotics anti-Alzheimer's disease agents, antitussives,
anxiolytics and muscle relaxants\(^16\).

Morphine was discovered by Freidrich Wilhelm Adam Serturner. \((-\text{-})\) Morphine
(II), the morphinan isoquinoline is the most abundant and important
constituent of the dried latex of *Papaver somniferum*. Morphine has long been
known to act on receptors expressed on cells of the central nervous system
resulting in pain relief and analgesia\(^17\text{--}^18\). One derivative now in late clinical
trial as a pain treatment is morphine-6-glucuronide (M6G), the major active
metabolite of morphine, with fewer side effects than parent compound\(^17\text{--}^18\).

\((-\text{-})\) --\(\Delta^9\)-trans- Tetrahydrocannabinol (THC) (III), is the major psychoactive
constituent of marijuana, *Cannabis sativa* to treat nausea and vomiting
associated with cancer therapy and it has been used for a quick action to treat
appetite loss in patients with HIV/ AIDS \(^17\). The analog of THC, cannabidiol,
has been applied for the alleviation of neuropathic pain and spasticity for
patients\(^19\) and is used as a typical antipsychotics in treating schizophrenia\(^20\).

Literature survey has shown that it may relieve symptoms of dystonia\(^21\text{,}^22\).

An alkaloid, atropine, (IV), was isolated from the Atropa belladonna (deadly
nightshade) posses anticholinergic and antispasmodic activity. Newly
introduced example of an anticholinergic compound modeled on atropine is
tiotropium bromide (XI), which is used for the maintenance treatment of
bronchospasm associated with chronic obstructive pulmonary disease\(^23\).

Galanthamine (V), an amaryllidaceae alkaloid, an anti-Alzheimer agent was
obtained from the bulbs of *Leucojum aestivum* (snowflake) and *Galanthus spp*
(snowdrops)\textsuperscript{6-9}. Its bromide derivative shows neurological degeneration by inhibiting this enzyme and by interacting with the nicotinic receptor\textsuperscript{24}. An antimalarial compound, artemisinin (VI), along with its precursor, artemisinic acid, was isolated from \textit{Artemesia annua}\textsuperscript{25}.

The cancer chemotherapeutic agent, "taxol" (VII), was isolated from the bark of \textit{Taxus brevifolia}. Its semi synthetic analogue docetaxel is also used. The starting material 10- Acetylbaccatin III is employed for the synthesis of above compound which was isolated from \textit{Taxus baccata}\textsuperscript{26}. Camptothecin (VIII) was isolated from \textit{Camptotheca acuminata}, and from the roots of \textit{Nothapodytes nimmoniana}\textsuperscript{27}. Cancer chemo preventive agents, such as curcumin from \textit{Curcuma longa}, epigallo catechin 3-O- gallate from green tea, and trans-resveratrol from grapes were reported\textsuperscript{28}.

The whole plant of \textit{Achyranthes aspera} L. has been used as a remedy for a number of diseases. A decoction of the plant has been recommended as a diuretic. It is used in renal dropsy and general anasarca\textsuperscript{29}. The plant is used to dissipate corneal capacity and to relieve tooth ache, dysentery and bowel complaints\textsuperscript{30}. Roots are useful in the treatment of pneumonia\textsuperscript{31}. The ash is employed in cough\textsuperscript{29, 30, 32}. Stoll and Seeback isolated an active principle, \textit{Alliiin} (IX), from \textit{Allium sativum} L.\textsuperscript{33}, a precursor of a highly bactericidal substance allicin\textsuperscript{34, 35}. Kitanaka and Takido\textsuperscript{36} had reported antimicrobial activity for seeds and roots of \textit{Cassia obtusifolia}. Compounds benzoquinones (2, 5-dimethoxy-benzoquinone) and Aloe-emodin isolated from the roots and isolorlac tone, toralexone, questin and torasachrysone (X) from the seeds demonstrate antimicrobial activities. The ethereal, ethanol and aqueous extracts of \textit{Mallotus philippines} Muell Arg. has been used as an antihelmintic drug. It contains phenolic compounds, of which rottlerin (XI) is the main component.\textsuperscript{37-39}

Thus plant medicines remain indispensable to modern pharmacology and clinical practice. Much of the current drug discovery and development process is plant based and new medicines derived from plants are inevitable.
Natural Products Derived From Plants

(I)

(II)

(III)

(IV)

(V)

(VI)

(VII)

(VIII)

(IX)

(X)

(XI)
2.0 Boraginaceae

The Boraginaceae family includes herbs, shrubs or trees comprising about 100 genera and 200 species that have flowers in helicoids, cymes and often have herbage that is coarsely hairy. The leaves are simple, mostly entire and alternate; stipules are lacking. The flowers are always bisexual and actinomorphic. The fruit consists of 4-1 seeded nutlets or 1-4 seeded nut, drupe fleshy or non-fleshy; when dry, dehiscent or indehiscent or a schizocarp 40, 41. The fruit consists of 4-1 seeded nutlets drupe fleshy or non-fleshy; when dry, dehiscent or indehiscent or a schizocarp.

2.1 Genus - Ehretia

A genus *Ehretia* is glabrous trees or shrubs, distributed in the tropical and sub-tropical regions of the world 40. The genus contains about 50 species and out of that 10 species occur in India 43.

2.2 Phytochemistry

During the past decades, phenolic acids, flavonoids, benzoquinones, cyanogenetic glycosides, fatty acids and other compounds were isolated from genus Ehretia.

Phenolic acids are one important type of components in this genus. Methyl 2-O-feruloyl-1a-O-vanillacetate, Caffeic anhydride (XII), Rosmarinic acid (XIII), Methyl rosmarinate, Trans-4-hydroxycyclohexyl-2-O-p coumaroyl-β-D glucopyranoside were isolated from *E. obtusifolia* 44. Li et al. isolated seven different phenolic acids from *E. thyrsiflora*. These include trans-ferulic acid 45, Lithospermic acid B 45, Danshensu 45, cinnamic acid 45, Caffeic acid 46, p-hydroxy benzoic acid 46, and (E)-ethyl caffeate 47. The literature survey noticed thirteen flavonoids from this genus. Li et al. noted ten flavonoids from *E. thyrsiflora*, as quercetin-3-O-α-D-arabinoside 46, Kaempferol-3- O-α-D-arabinoside 46, Quercetin 46, and Kaempferol 46, Quercetin - 3 – O – β – D – glucopyranoside (XIV) 45, Hyperosid 45, kaempferol – 3 – O – β – D -galactopyranoside 45, Kaempferol – 3 – O – β – D -glucopyranoside 45.
Kaempferol – 3 – O - arabinosylgalactoside\(^{45}\) and Quercetin-3-O - arabinosyl galactoside (XV) \(^{45}\). The phenolic compounds Ehletianol A, B, C and Buddlenol B were reported from the bark of the \(E.\) ovalifolia \(^{48}\). Flavonoids like Ovalifolin, Apigenin and Luteolin were isolated by Khattab, Grace and El-Khrisy from \(E.\) ovalifolia \(^{49}\).

This genus displayed the most characteristic class of compounds, benzoquinones. Most of them were biosynthesized from the compound 4-hydroxybenzoic acid and monoterpenes. They exhibited bioactivities such as hematischesis, antibacterial and antivirus. Ehretianone (XVI), quinonoid xanthene, was reported from root bark of \(E.\) bauxifolia \(^{50}\).

Literature survey allocated the presence of Allomicrophyllone, Microphyllone (XVII), Dehydromicrophyllone, Hydroxymicrophyllone and Cyclomicrophyllone in \(E.\) microphylla \(^{51}\). In 1994, Simpol et al. \(^{52}\) reported three cyanoglycosides – Ehretoside A1 (XVIII), Ehretoside A2 and Ehretoside A3 from \(E.\) phillippinensis along with Simmondsin (XIX), Ehretoside B and polyalcohol.

Fatty acids and related compounds were reported from the species \(E.\) ovalifolia, \(E.\) dicksonii and \(E.\) thyrsiflora. Khattab et al. mentioned Araneosol from \(E.\) ovalifolia \(^{49}\). (10E-12Z, 15Z)-9-hydroxy-10, 12, 15-octadecatrienoic acid methyl ester (XX), (9Z, 11E)-13-hydroxy-9, 11-octadecadienoic acid (XXI) and (9Z, 11E)-13-oxo-9, 11-octadecadienoic acid (XXII) were quoted from \(E.\) dicksonii \(^{53}\). Li and co-workers noted 2-methoxyl benzoic acid octyl ester, Di (octadecyl) phthalate, Tetradecenoic acid, 2, 3-dihydroxypropyl ester from \(E.\) thyrsiflora \(^{47}\).

Alkaloids were reported from Ehretia genus. Ehretinine, (XXIII) \(^{54}\) and Allantoin \(^{47}\) were noticed from \(E.\) aspera and \(E.\) thyrsiflora. Sterols like Stigmasterol (XXIV), Stigmastanol, Campesterol, \(\alpha\)-Spinasterol and Cholesterol from \(E.\) bauxifolia \(^{50}\) while Daucosterol were reported from \(E.\) thyrsiflora \(^{47}\).

Thus literature survey indicates that genus Ehretia is medicinally significant as it is composed of various bioactive components.
2.3 Biological Activities of Genus Ehretia

The plants of this genus have significant medicinal importance and many species have been used in traditional medicine as a remedy for the treatment of diarrhea, cough, cachexia, syphilis, toothache, stomach and venereal diseases and as an antidote to vegetable poison. The decoction of fresh root of *E. obtusifolia* is recommended in venereal diseases. The powdered roots of *E. rigida* are employed to treat small cuts in the skin. It is applied over the abdomen and chest to relieve pains. It is also used to treat gall sickness in cattle. The leaf juice of *E. silvatica* is utilized on wounds as a styptic and the leaf is used as a wound dressing. The sticks of *E. amoena* are used for backache. A decoction of the roots and bark of *E. Philippinesis* is used as a mouth wash. Fresh green leaves or the bark scraped to a pulp are applied to affected painful tissues. A decoction of the stem bark or the whole root has been administered effectively in cases of dysentery with bloody stools. The fresh root of *E. microphylla* is used as an alternative in cachexia and syphilis and as an antidote to vegetable poisoning. The root of *E. bauxifolia* is given as depurative after parturition. An infusion of the leaves is used internally and externally as a diaphoretic in fever and is prescribed for stomach trouble. The leaves are used to treat diarrhea with bloody stools.

Antioxidant effect
The literature survey revealed that the antioxidant property of *E. thyrsiflora* leaves have free radical scavenging activity. Its ethyl acetate fraction containing abundant polyphenols showed strong antioxidant activity.

Anti-inflammatory effects
Methyl 2-O-feruloyl-1α-O-vanillacetate, caffeic anhydride (XII), rosmarinic acid (XIII), methyl rosmarinate and trans-4-hydroxycyclohexyl-2-0-p-coumaroyl-β-D-glucopyranoside isolated from the ethyl acetate fraction of *E. obtusifolia* exhibits anti inflammatory activity. It inhibited lipoxygenase in a concentration dependent manner. (10 E, 12Z, 15Z)-9-hydroxy-10, 12, 15
- octadecatrienoic acid methyl ester (XX) from E. dicksonii suppressed TPA-induced inflammation. (9Z, 11E)-13-hydroxy-9,11-octadecadienoic acid (XXI) and (9Z, 11E)-13-oxo-11-octadecadienoic acid (XXII) showed potent activity which has inhibitory activity toward soybean lipoxygenase.

**Antisnake venom effects**
The antisnake venom activity was determined in mice using the root bark of E. bauxifolia. The methanol extract indicated strong neutralization, prophylactic and curative activity. In the neutralization studies, Ehretianone (XVI), isolated from this species, showed significant protection in mice.

**Anti-allergic effects**
The ethyl acetate fraction of E. microphylla showed anti-allergic activity. The bioassay-guided separation of it was afforded five benzoquinones, microphyllones (XVII) and allomicrophyllone showed strong anti-allergic activities while, dehydromicrophyllone and cyclomicrophyllone had weaker activity. n-Butanol and ethyl acetate extracts of E. phillippinensis were found to have antihistamine release activity. The literature survey revealed the bioassay guided separation of the active fraction, which afforded six inactive cyanogenetic glycosides (XVIII and XIX). Ehretia microphylla had strong antihistamine activity, from its leaves rosmarinic acid (III) was reported which, exhibited antihistamine release properties.

The presence of rich polyphenols and flavonoids are the characteristic feature of this genus. Such potent compounds are responsible for medicinal value of the plant. The antioxidative and anti-inflammatory activities are associated with medicinal plant - Ehretia. Benzoquinones are the important group of potent drugs which, appear in nature. The plant containing benzoquinones have important bioactivities of hematischesis, anti-bacterial and anti-viral activity that could be used as marker compound/s. The chemical constituents existed in this genus Ehretia, attracted scientists to pay more attention for the potent and prospect activity of these species just like other species from the family Boraginaceae.
Chemical Constituents of the Genus Ehretia

(XII)

(XIII)

(XIV)

(XV)

(XVI)

(XVII)

(XVIII)

(XIX)

(XX)

(XXI)

(XXII)

(XXIII)

(XXIV)
3.0 Bignoniaceae

This family takes its name from one of its genera, *Bignonia*. This family consists of trees, shrubs and climbers. Six hundred species are arranged in more than 100 genera. Most of the species are distributed in America, particularly in South America. Many of these exotics are grown in India and they add a great deal of beauty to our avenues and public places. One such example is tulip tree. The jacaranda is also common as an avenue tree. Besides, their use as an ornamental plant, some members also provide timber such as *Catalpa, Oroxylum, Haplophragma, Spathodea, Meliosma, and Stereospermum*. Fruit from the *Crescentia cujete* is used in the tropics as a water container. The fruit of the *Kigelia Africana* is used as laxative and for dysentery. The family can be divided into two genera that are Bignonia – leaves with tendrils and Tecoma - leaves without tendrils 60, 61.

3.1 Genus Tecoma

Tecoma is a fairly large genus within the family Bignoniaceae. There are about 25 species, natives of warm regions, mostly either north or south of the tropics, widely distributed in both hemispheres. They are shrubs or rarely arborescent 62. Important plants in this genus include *T. stans, T. capensis, T. radicans*, *T. grandiflora, T. jasminoides* and *T. australis* 63.

3.2 Phytochemistry

Literature survey revealed that this family includes anthraquinones, verbabascosides, quercetin, ursolic acid and more rarely saponins. The leaves of *T. chrysantha* Iridoid glucosides, 6 – epiaucubin and its ester derivative 64, iridoid amareloside (XXV) 65, glucosidic iridoid, the 6-O-(p-hydroxybenzoyl) -6-epiaucubin (XXVI) 66 were reported.

Bianco et. al. isolated four iridoids from *T. capensis* along with known tecomoside (XXVII). These were 7 - O – aryl derivatives of tecomoside namely 7 - O – (p-methoxy)-trans- cinnamoyl, 7 - O –trans- cinnamoyl, 7 - O – (p-hydroxy)-trans- cinnamoyl and 7 - O – (p-hydroxy) benzoyl tecomoside 67. An acylated derivative of Luteolin, Viz, Luteolin 7-O- (6"- O – E – caffeoyl) - β
- D-glucopyranoside was isolated from leaves of *T. capensis* along with six flavonoidal compounds. The compounds were Luteolin 7-O-β-D glucuronopyranoside, Apigenin 7-O-D-glucuronopyranoside, Luteolin 7-O-D-glucopyranoside, Luteolin 7-O- (6"-O-E-p-coumaroyl) – β-D-glucopyranoside, Apigenin and Luteolin. The reports disclosed Lapachol, α-lapachone, dehydro α-apachone, dehydro-iso- α-lapachone, Sitosterol and 2 new naphthoquinones designated as tecomaquinone I (XXVIII) and tecomaquinone II (XXIX) from the heartwood of *T. pentaphylla*. The glucosidic iridoids as 6-O-(p-OH) benzoyl-6-epimonomelittoside (XXX) and 6-O-(p-OCH₃) benzoyl-6-epimonomelittoside (XXXI) 70 along with glucosyl substituted compounds were reported from *T. heptaphylla*.

The compounds stansioside and plantarenaloside were noted from *T. fulva*. *T. arequipensis* bark yielded the major alkaloid component (-) N-normethylskytanthine (XXXII) 73.

Flavonoids and carotenoids such as, Kaempferol, Quercetin, Luteolin, Cyanidin -3- rutinoside, Lycopene, Capsanthin, β-Carotene and Zeaxanthin were reported from the flowers of *T. argentea*. The flavanone disaccharide naringenin 7-O-α-L-rhamnosyl (1→4) rhamnoside (XXXIII) and dihydrokaemferol 3-O-α-L-rhamnoside 5-O-β-D-glucoside were isolated from the leaves of *T. grandiflora*. Prakash et al analyzed the carbohydrates and proteins from the seeds of *T. undulata*. The flavone glycoside 5, 7-dihydroxy – 6-methxyflavone 7-O-α-L-rhamnopyranoside was isolated from the seeds of *T. undulata*. The highest numbers of amino acids were identified from the stems of *T. undulate* and they were identified. Furanonaphthoquinones I (XXXIV) and Furanonaphthoquinones II (XXXV) were communicated from the bark of *T. ipe*. Polysaccharides like galactose, mannose and reducing sugars were detected from seeds of *T. urgentia*. Compounds like α-Amyrin, 3-hydroxy-urs-12 ene-28-aldehyde, β-Sitosterol, Ursolic acid lactone, Ursolic acid (XXXVI), 2, 3,19-trihydroxy-urs-12-ene-28-oic acid (2-tormentic acid), β-Sitosterol – 3 – O – D
- glucoside, Apigenin - 7 - O- L - rhamnoside, Apigenin - 7 - O - rutinoside, Luteolin - 7 - O - rutinoside and Apigenin - 6,8 - di C - D - glucopyranoside were reported from the leaves of *T. mollis*. Compounds Cortol (steroid), Sugenol acetate (sesquiterpene), Oxiraneoctanoic acid 3- octyl methyl ester, Benzyl benzoate and the triterpene Ursolic acid were isolated from *T. radicans*. Chemical investigation of the aerial parts of particular species indicate the presence of four coumarins, 2', 3' - Epoxide alloimperatorin (8-methoxy furanocoumarin), Pabulenone (5 - alkoxy - furanocoumarin), Pereflorin B and 17- methylbothrioclinin.

**Biological Activities of Genus Tecoma**

Bignoniaceae family is important for their bio- active constituents and diverse pharmacological activites. Plants are widely used in traditional medicinal systems. These species are used for treatment of ailments like cancer, snake bite, skin disorders, gastrointestinal disorders, respiratory disorders, gynecological disorders, hepatic disorders, epilepsy, cholera, pain, urinary problems, malaria, heart problems and sexually transmitted diseases. *Tecoma ipe* contain antitumor agents. The extract of *T. capensis* exhibited significant diuretic, analgesic and antipyretic effects, also shows an inhibitory action on intestinal and uterine motility. *T. radicans* shows anti – oxidant activity for aerial parts and anti- inflammatory activity for leaves. The seeds of *T. undulate* and *T. urgentia* shows high nutritional properties and are used in cattle feed industries.

The genus showed the presence of compounds like Ursolic acid, Oleanolic acid, α- and β-lapachone, Lapachol, Verbascoside, Corymboside, Lupeol, Quercitrin, Apigenin, Pomolic acid, and Isoacteoside were pharmacologically important. Ursolic acid displayed anti- trypanocidal, anti-diabetic and anti- fungal activity. The reports illustrated anti-arthritis effect for ursolic acid.

Ursolic acid and Oleanolic acid demonstrated anti-cancer activity by inducing apoptosis in human liver cancer cell lines. It also elucidated anti-
oxidative and anti-inflammatory activity. Pomolic and ursolic acids made an appearance for anti-nematicidal activity.

As summarized, many different species of Ehretia and Tecoma have been used since ancient times. There are few reports in connection with the research work on the biological activities and plausible medicinal applications of the isolated compounds and hence, extensive and systematic investigation is needed to exploit their therapeutic utility to combat diseases. In fact, time has come to make good use of centuries-old knowledge through modern approaches of drug development.

Although crude extracts from various parts of these plants have medicinal applications from time immemorial, modern drugs can be developed after extensive investigation of their bioactivity study, mechanism of action, pharmaco-therapeutics and toxicity. The proper standardization and clinical trials are necessitates to carry out potency of particular part of the plant.

Thus, chemical screening of chemo taxonomically related species have been undertaken for their phytochemical investigations and evaluation or broadening the source of bioactive compounds particularly, when their synthesis is very costly and time consuming.

The chemical constituents existed in this genus Tecoma, attracted scientists to pay more attention for the potent and prospect activity of these species just like other species from the family Boraginaceae.

The present research work describes the chemical investigation and biological activity of medicinal plants – *Ehretia laevis* and *Tecoma stans*. 
Chemical Constituents from the Genus Tecoma

(XXV)

(XXVI)

(XXVII)

(XXVIII)

(XXIX)

(XXX)

(XXXI)

(XXXII)

(XXXIII)

(XXXIV)

(XXXV)

(XXXVI)
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