PROMISING PHYTOCHEMICALS FROM MEDICINAL PLANT ECLIPTA ALBA
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ABSTRACT

World Health Organization appreciated the importance of medicinal plants for public health care in developing nations like India. Eclipta alba having important role in the traditional Ayurvedic and Unami systems of holistic health and herbal medicine of the east. The principal constituents of Eclipta alba are coumestan derivatives like wedololactone[1.6], demethylwdelolactone, desmethylwelololactone-7 glucoseide and other constituents are ecliptal, B-amyrin, luteolin-7-O-glucoside, hentircontonal, heptacosanol, stigmasterol . Our research represented here highlights chief constituents, their biological activities, pharmacological activities, toxicity and clinical studies. The present work highlights the results of studies carried out to identify the constituents of the aromatic medicinal plant Eclipta Alba, We would further synthesize the schiffs bases of certain of the constituents viz. flavanoids/phytochemicals and later synthesize their Transition Metal Complexes especially with Platinum, Gold, Palladium, Ruthenium, Rhodium , apart from Copper, Cobalt, Iron, Nickel, Zinc, Cadmium, and Chromium. The precursors, the derivatives/Analogues and the Transition Metal Complexes, area all excellent candidates as Anticancer Drugs.

Introduction: More than 20,000 plant species are used for medicinal purposes (Pedros, 1983). Seventy four percent of 119 plant derived drugs were discovered as a result of chemical studies to isolate the active substances responsible for their traditional use (Farms worth and Soejarto, 1991). So plants, especially the higher plants contains a variety of substances, which are useful as food additives, perfumes and in treatment of various diseases, as medicine, due to
their versatile therapeutic potential (Mukharjee and Wahile, 2006).

World Health Organization appreciated the importance of medicinal plants for public health care in developing nations like India. Eclipta alba having important role in the traditional Ayurvedic and Unami systems of holistic health and herbal medicine of the east. The principal constituents of Eclipta alba are coumestan derivatives like wedelolactone[1.6], demethylwedelolactone, desmethylwedelolactone-7 glucoseide and other constituents are eclipital, B-amyrin, luteolin-7-O-glucoside, hentircontonal, heptacosanol, stigmasterol. In recent year, the chemical constituents, antimicrobial activity and antioxidant activity of many aromatic plants and spices such as Z. officinale, Z. cassumunar, Curcuma domestica and C. ordorata are well studied. All the plants of Eclipta Alba and chemical constituents are used as anticancer, antileprotic, analgesic, antioxidant, antimonytoxic, antihaeamorrhagic, antipatotoxic, antiviral, antibacterial agents. Medicinal plants are important substances for the study of their traditional uses through the verification of pharmacological effects and can be natural composite sources that act as new anti-cancer/ anti Microbial/ Anti tubercular agents. The biological activities are possessed by E.alba, such as memory disorder treatment,hepatitis,antioxidant, and anticancer activity. The phytochemicals analysis of plants, used as folkmedicine has yielded a number of compounds with various pharmacological activities. In recent decades, phytochemicals have been great interest, as the sources of natural antioxidant, antitumor and antimicrobial activities. 

Our research represented here highlights chief constituents, their biological activities, pharmacological activities, toxicity and clinical studies. The present work highlights the results of studies carried out to identify the constituents of the aromatic medicinal plant Eclipta Alba, d. We would further synthesize the schiffs bases of certain of the constituents viz. flavanoids/ phytochemicals and later synthesize their Transition Metal Complexes especially eith Platinum, Gold, Palladium, Ruthenium, Rhodium, aprt from Copper, Cobalt, Iron, Nickel, Zinc, Cadmium, and Chromium. The precursors, the derivatives/Analogues and the Transition Metal Complexes, area all excellent candidates as Anticancer Drugs.
Results and Discussion

Materials and Methods:

Chemicals and Reagents:

All Chemicals were purchased from Sigma and all the reagents used were of Analytical grade.

Plants of E. alba were collected from botanical gardens and surroundings of Gitam University, Vishakapatnam. The plant was duly authenticated and voucher specimens (EA-11) were deposited in the herbarium. The three monthold 950gm of leaves of the plant were dried at room temperature, powdered and extracted with methanol (70% V/V) in soxhlet apparatus for 3 days. The extract was filtered and reduced the solvent, adsorbed on silica gel (100-200 mesh) and subjected to column chromatography. The column eluted with n-hexane and ethyl acetate (5%, 10%, 20%, 30%, 40%, 50%, 70%). Out of the 10 spots visible from the TLC we were able to purify 4 compounds and their spectral studies are in progress. But the initial information indicated them to be wedelolactone, demethylwedelolactone and triterpene.

\[ \text{Wedelolactone} \]

\[^1\text{HNMR}: 1.88, 2.06, 2.07, 2.08, 2.09, 2.11, 3.41, 3.89, 6.54, 6.55, 6.57, 6.58, 7.2 \text{ and } 7.4 \]

\[^1\text{CNMR}: 28.14, 54.79, 92.70, 96.35, 97.58, 97.82, 101.53, 104.14, 113.98, 143.39, 144.5, 149.0, 154.3, 155.17, 157.5, 158.92, 162.27, 203 \]

\[ \text{IR (cm}^{-1}\text{): } 1319, 1637, 1700, 2362, 3445. \]

\[ \text{IR (cm}^{-1}\text{): } 3420, 1718, 1701. \]
Demethylwedelolactone

![Chemical Structure of Demethylwedelolactone](image)

R1=B- glucopyranosyl and R2=-H,-glu..

Four compounds are isolated from the medicinal plant Eclipta alba. These are 7-methoxy-5,11,12 Trihydroxy coumestan; (1,3,8,9) Tetrahydroxy coumestan;

And triterpenes derivatives of 3- O[beta-D-glucopyranosyl beta D-glucopyranosyl]-16 alpha ethoxy-Olean-12-ene-28-oic acid and 3-O[2-O-Sulfuryl-beta-D-glucopyranosyl- beta-D-glucopyranosyl]-echinocystic acid derivatives. The new triterpen derivatives structures are given. FT-IR, 1HNMR, CHO analysis of the isolated compounds are reported and the structures of the isolated compounds have been proposed. The antioxidant activity of the isolated Phytochemicals and their derivatives are being tested. The anticancer activity studies of these compounds isolated are in progress.
References


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