
Chapter VI

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Cleome gynandra L. grows abundantly in the lands and fields. It has high medicinal values and economically cheap. Plants having rich mineral, protein, and amino acids. Many research works established the antioxidant, anticarcinogenic, analgesic, immunomodulator and antidiabetic properties of *Cleome gynandra*.

The phytochemical analysis of different parts of plant (leaf, stem and root) extracted in diethyl ether, chloroform, acetone were analysed. It showed the presence of secondary metabolites. Like tannin, saponin, flavonoid, steroid, terpenoids, glycosides, alkaloids, anthraquinones. Predominantly, the leaf extracts contain tannin, saponins, sterols, cardiac glycosides and alkaloids and saponins respectively constituents such as chlorophyll a, b, total chlorophyll, amino acid, protein, carbohydrate and phenol of plants were present.

The different parts of the plant sample were related to the *in vitro* study of metal contents. The leaf, stem and root contain Cd, Cr, Cu, Fe, Ni, Pb and Zn in various concentrations and estimated.

GC – MS analysis revealed the active compounds of the plant. The compound separated from ethanolic extract contains two major compounds (E – 9 – Octadecenoic acid, ethyl ester and hexadecanoic acid, ethyl ester), E – 9 – Octadecenoic acid, possesses inhibitory effect on esterase activity and hexadecanoic acid having inhibitory activity against pathogens.

The plant extract was used for the synthesis of Silver Nanoparticles. And it was characterized by UV- Vis Spectroscopy, at gradual increase of concentrations showed dark brown colour of Surface Plasmon Resonance (SPR) band. And the peak observed between 380 – 150 nm. The average sizes of Silver Nanoparticles were around 90 nm. In the SEM analysis in EDS and XRD of used to determine the chemical composition and crystal structure of sample. The DLS zeta size study showed that the size between 80 and 120 nm and its potential was negative charge (- 29.5) which indicated the sample was moderately stable at room temperature.

The plant extracts showed the antimicrobial activity against the pathogens. The sample was more effective against *slmonella typhimurium* and least effect in micrococcus. Luteus in the lacteria in fungi, it was effective against *Trichophyton rubrum rubrum* and lass in *Cryptococcus sp.* All the microbial strain depicts higher sensitivity in the concentration of 30ul/ disc.

The cytotoxic effect of Silver Nanoparticles was examined on human Osteoscoma cell lines (MG 63) for 24 h and 48 h. The Silver Nanoparticles inhibited the growth of the cancer cells significantly, in a dose and duration dependant manner. The survivalto to 50% (IC50) when compared to untreated cells, according to the dose values of the exposure of the complex required. In Silver Nanoparticles the 25ul of sample was found to be sufficient to inhibit the cancerous cells. Whereas above 50 μ L is required to control the cancerous cells.

The cytotoxic effect of the sample may be interpretable as due to its amphiphilic nature and, hence, would penetrate the cell membrane easily, reduce the energy status in tumours and also alter hypoxia status in the cancer cell.

In the present investigation, lighter upon the nanoparticles from medicinal the plant is highly warranted to active principle action for biochemical and molecular objection. The Effective synthesis of nanoparticles have greater implication and in the Biomedical Research.