CONCLUSION

India has rich flora of medicinal plants and these medicinal plants are very much used in traditional system of medicine and many pharmacological properties have been attributed to various parts of these plants. Following three plants part have been selected for the standardization and antimicrobial activities.

1. Fruits of *Tribulus terrestris* Linn.
2. Seeds of *Cichorium intybus* Linn.

Looking to the medicinal utility of these plants in the literature and comparatively pharmacognostic studies on the parts of these plants are very few and fragmentary. As pharmacognostic screening of the plant parts is essential for identification of the commercial sample, the same has been undertaken to standardize for prevention of admixtures and adulterants in the preparation of Ayurvedic formulation.

Hence the above mentioned parts of these medicinal plants were subjected for standardization and the extracts isolated from these plants part were screened for antimicrobial activities.

The above parts of the plants were procured from local market of Modinagar, Ghaziabad and were identified by Dr. H.B. Naithani, Botanist and Scientist, Forest Tree Seed Laboratory, Silviculture Division, Forest Research Institute, Dehradun.

The proximate analysis of the fruits of *T. terrestris* was carried out to lay certain standards for the air dried drug. The high value of total ash indicated the presence of considerable amount of inorganic constituents in the fruits. The alcohol and water-soluble extractive values were also rather high, indicated the presence of sugars and resin etc. The qualitative examination of the various solvent extracts of fruits indicated the presence of alkaloid, fixed oil, resin, traces of glycosides, proteins,
tannins, reducing sugars and sterols. Thin-layer chromatography indicated the presence of diosgenin by Co-chromatography using authentic sample. Further studies require the identification of other eight phytoconstituents. The successive solvent extracts of the fruits with petroleum ether, benzene, chloroform, ethanol and water when scanned by HPTLC using solvent system toluene: ethyl acetate (8:2) at 366nm, indicated the presence of 5,6,4,4 and 2 components respectively. Macroscopic and microscopic characters of the fruits were also studied.

The proximate analysis of the seeds of *C. intybus* was carried out. The high value of total ash indicated the presence of considerable amount of inorganic constituents in the seeds. The petroleum ether-soluble extractive value was also high, indicated the presence of fixed oil and fat and sterols etc. The phytochemical tests indicated the presence of fixed oil and fat, sterols, carbohydrates, tannins and proteins in various solvent extracts. Thin-layer chromatography study of alcoholic extract showed the presence of three different types of sterols and sugars. Further studies require the identification of different five phytoconstituents. The successive solvent extracts of the seeds with petroleum ether, benzene, chloroform, ethanol and water when scanned by HPTLC using solvent system chloroform : methanol : formamide (8.0 : 1.9 : 0.1) indicated the presence of 3,3,3,11 and 10 components respectively. Macroscopic and microscopic characters of the seeds were also studied.

The proximate analysis of the seeds of *D. biflorus* was carried out. The high value of total ash indicated the presence of considerable amount of inorganic constituents in the seeds. The water-soluble extractive value was also high, indicated the presence of sugars. The qualitative examination of the various solvent extracts of seeds indicated the presence of carbohydrates, sterols, proteins and aminoacids, fixed oil and fat and absence of alkaloids, glycosides, saponins, resins, gums and mucilages. Thin-layer chromatography indicated the presence of eight amino acids viz. alanine, histidine, cystine, aspartic acid, leucine, glycine, serine and lysine as well
as the five various sugars like rhamnose, arabinose, fructose, galactose and glucose by Co-chromatography using authentic sample. The successive solvent extracts of the seeds along with authentic amino acids and sugars were also scanned using different solvent systems by HPTLC. Macroscopic and microscopic characters of the seeds were also studied.

The ethanol extract and petroleum ether (60 - 80°) extract of the fruit of *T. terrestris* possess antimicrobial activity against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans* as compared to standard drugs. Further studies require the detailed chemical nature of the active principle(s) responsible for the antimicrobial activity.

The antimicrobial studies of the seeds of *C. intybus* revealed that ethanol extract and petroleum ether (60-80°) extract exhibited moderate to significant activity against *Aspergillus niger*, *Aspergillus flavus*, *Candida albicans* and *Fusarium oxysporum*, at a concentration of 30 μg and 60 μg but none of the extracts was active against the tested bacterial organisms. Further the detailed chemical nature of the active principle(s) responsible for the antifungal activity is required.

The ethanol extract of the seeds of *D. biflorus* possesses significant antibacterial activity against *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa* at a concentration of 25 μg and 50 μg and petroleum ether extract at the concentration of 50 μg showed a slight antibacterial activity against *Escherichia coli* and *Pseudomonas aeruginosa*. None of the extracts was found active against *Aspergillus niger* and *Candida albicans*. Further studies require the detailed chemical nature of the active principle(s) responsible for the antibacterial activity.