CHAPTER 5

SUMMARY & CONCLUSION
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Conclusion

Present work is an attempt to compile pharmacognostic phytochemical and pharmacological work on *Oldenlandia corymbosa* and *Grangea maderaspatana*.

Both the plants were identified by Botanical survey of India, Jodhpur.

In morphological study it was found that *Oldenlandia corymbosa* leaf is simple, opposite, sessile, linear-lanceolate, acute; stem is green-purple, quadrangular; tap root is white colored; flower is sessile white colored; fruit is globose capsular. *Grangea maderaspatana* leaf is simple, alternate, oblong-ovate, obtuse, sinuate, highly pubescent; stem is prostrate, green colored, pubescent; tap root is white colored; flower is solitary yellow colored; fruit is cylindric, glandular.

In microscopic study it was found that *Oldenlandia corymbosa* leaf is dorsiventral, colateral vascular bundle, covering trichome; stem shows quadrangular, epidermis with covering trichomes, colateral vascular bundle, pith; root shows cork, cortex with raphides, phloem and xylem. *Grangea maderaspatana* leaf is dorsiventral, bicolateral vascular bundle, covering trichome; stem shows epidermis with covering trichomes, cortex with microsphenoidal calcium oxalate crystals, phloem, xylem and pith; root shows cork, cortex, pericyclic fibres, phloem, xylem and medullary rays.

In powder microscopy, *Oldenlandia corymbosa* powder shows presence of paracytic stomata, raphides, cork, phloem and xylem. *Grangea maderaspatana* powder shows presence of Anisocytic and anomocytic stomata, fibres, cork, multicellular covering trichome, phloem and xylem.
The powdered drugs were subjected to phytochemical screening after successive solvent extraction. Qualitative chemical examination of extracts revealed presence of saponins, carbohydrates, triterpenes, phytosterols and phenolics/tannins.

The presence of Oleanolic acid and ursolic acid in chloroform and methanol extracts of both plants were confirmed by HPTLC fingerprinting and the content was calculated from AUC of oleanolic acid and ursolic acid. The chloroform extract of *O. corymbosa* contains 32.0% and 61.0% of oleanolic acid and ursolic acid respectively. The methanol extract of *O. corymbosa* contains 23.5% and 45.0% of oleanolic acid and ursolic acid respectively. The chloroform extract of *G. maderaspatana* contains 4.0% and 9.5% of oleanolic acid and ursolic acid respectively. The methanol extract of *G. maderaspatana* contains 3.0% and 6.5% of oleanolic acid and ursolic acid respectively.

Gallic acid was estimated by HPLC method, a linear relationship was observed within the range of 10-70 µg/ml and correlation coefficient was 0.9934. The content of Gallic acid by HPLC method in *O. corymbosa* and *G. maderaspatana* was 2.45% w/w and 4.00% w/w respectively.

Toxicity studies were performed for different extract to assess their safety in mice. Methanol, and chloroform extract of both plants were found safe and did not cause any mortality at the dose of 2000 mg/kg body weight.

Forced swim test, Elevated plus maze model, Head dip Test and Immobility test were used to evaluate Psychopharmacological activity of chloroform and methanol extracts of both plants.

Antidepressant activity was evaluated by Forced Swim Test in which immobility time was noted. Anxiolytic activity was performed using elevated plus maze model. This model itself induces anxiety. The % open arm entries and % time spent in open arm was noted. The exploratory behavior was performed using hole board test apparatus and no. of head dipping was noted. The
CNS inhibitory activity was done by using Actophotometer in which spontaneous motor activity count was noted.

The extracts significantly decreased locomotor activity and increased immobility time suggesting depression and sedating potentials. Sedation may be due to interaction with benzodiazepines-like compounds.

The chloroform extract of both the plants show better activity in all above mentioned model. The activity may be due to presence of terpenes, saponins, flavanoids and phenolics.

The morphological, microscopical and physico-chemical parameters of *Oldelandia corymbosa* and *Grangea maderaspatana* can possibly help to differentiate the drug from its other species. The pharmacognostic profile of both the plants presented here may be useful to supplement information with regard to its identification and will be helpful in establishing standardization criteria.

The extracts of *Oldelandia corymbosa* and *Grangea maderaspatana* possess significant psychopharmacological activity and hence may prove to be beneficial and an alternative in the treatment of anxiety like disorders. The outcomes are encouraging to pursue further studies to suggest the underlying pharmacological mechanism and also to isolate and characterize probable bioactive molecule responsible.