



CHAPTER-6

CONCLUSION

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The present work was designed to evaluate orally efficacious and standardized *Curcuma longa* extract respect to its qualitative comparison with metformin and to explore its potential role in the management of comorbid anxiety and depression like disorders generally associated with diabetes followed by elucidation of their mechanism of action(s). The ultimate goal of the experiments and observations discussed in this thesis was to obtain evidence based pharmacological activities and to verify the possibility that metformin like stress response modulating efficacies of curcuminoids are also involved in its therapeutically interesting bioactivities observed in animal models. Observations made and inferences possible from these efforts strongly suggest that broad spectrum of pharmacological activity profile of 95.4 % curcuminoids containing *Curcuma longa* extract is due to its ability to protect animals against mental stress induced perturbations. Salient findings of the present research work are as follows:

- 95.4% w/w curcuminoids containing extract of *Curcuma longa* found to be most effective extract among tested four different extracts as well as turmeric oil.
- Results of these experiments strongly suggest that repeated dose treatment with CLE-3R is necessary for achieving its therapeutic effect.
- CLE-3R and metformin both have significant adaptogenic activity.
- Our observations reveal central analgesic and anti-inflammatory efficacies of both CLE-3R and metformin in rodents.
- CLE-3R and metformin are beneficial in management of dyslipidemia and insulin dysfunction induced by fructose feeding. These observations strongly suggest that the effects

of CLE-3R and metformin treatments on insulin level and body weight are due to their modulating activity of metabolic process in animals.

➤ CLE-3R has more pronounced antidepressant and anxiolytic activity than metformin, although hyperglycaemia and insulin deficiency during streptozotocin induced diabetes is significantly improved by both, metformin as well as CLE-3R. Brain monoaminergic and oxidative defense mechanisms are possibly involved in observed effects of CLE-3R and metformin.

Curcuma longa is another adaptogenic herb with a uniquely broad psychopharmacological activity profile and could be herbal lead for prevention and treatments of neurological disorders and other comorbidities commonly associated with diabetes. Curcuminoids are quantitatively the major stress response modulating secondary metabolites of the plant. The bioassay procedure used in this study is well suited for identifying bioactive constituents, therapeutic interesting dose and duration of phytomedicines like *Curcuma longa* extract. Further efforts to identify the roles of diverse other known bioactive secondary metabolites of the plant are necessary for better understanding of the Ayurvedic pharmacology of *Curcuma longa*.