SUMMARY

- In the present investigation we observed the presence of specific flavonoids (quercetin and rutin), Phenolics (Cinnamic acid and ferulic acid) in different parts of *C. auriculata* and poly phenols (mixed catechins along with caffeine) in flowers apart from various phytoconstituents. The potential hypoglycemic and antiradical efficiency of the extracts from different parts *in vitro* and *in vivo* activity of flower extract are concerted effect of above mentioned phytoconstituents. The results of the phytochemical analysis of the extracts showed the importance of selection of a suitable solvent for the efficacy and efficiency of the biological activity that the plant extracts expressed.

- The mechanism of action of the extracts from different parts in scavenging the variety of radicals produced *in vitro* is through chelation of metal ions, reducing properties and via hydrogen donating effect. The antihyperglycemic activity of the extracts *in vitro* proved the mode of action in regulating the elevated blood glucose, glycated haemoglobin and plasma insulin levels *in vivo*. This study observed the mode of hypoglycemic action *in vitro* through the regulatory effect on carbohydrate metabolizing enzyme such as α-amylase and α-glucosidase and confirmed by studying its effect on the same enzymes extracted from tissue homogenates.

- Potential ameliorating effect of *C. auriculata* flower extract on hyperglycemic condition and lipid peroxidation induced oxidative stress is due to the synergistic/antagonistic effect of phytoconstituents. The antidiabetic and antioxidant activity of the flower extract was proved well in both *in vitro* and *in vivo* studies establishing the therapeutic functionalities of the flower constituents in treating free radical mediated hyperglycemic condition.
• Quercetin, rutin and emodin isolated from the flower extract are well known antidiabetic and antioxidant agents and proved the synergistic approach of the phytoconstituents from different class of secondary metabolites in protecting the physiological system against radical mediated diabetic state.

• This study provides scope for the use of flowers in developing potent carbohydrate metabolizing enzyme inhibitors which can also be a good substituent to treat diabetic mediated oxidative stress.