Chapter 9

Conclusion

Standardisation of ethanolic extract of *Ficus religiosa* L. was done by measuring the marker compound by TLC, LCMS, FTIR and NMR and it was found that lupeol is the maker compound present in the *Ficus religosa* L. extract. Further, quantitative analysis of lupeol in *Ficus religosa* L. extract was done by RP HPLC method.

Ficus religosa L. extract loaded SLN were prepared by hot homogenization followed by ultrasonication method. Type and concentration of lipid, type and concentration of surfactant and processing parameters were optimized. Optimized batch of *Ficus religosa* L. extract loaded SLN was functionalized using triphenylphosphonium. ETNPs were found to be effective in the management of oxidative stress induced diabetes.

Lupeol loaded SLN was prepared by the same method followed for ETNPs preparation. LTNPs were found to be effective in maintaining the mitochondrial integrity but not LUNPs or lupeol. Further, LTNPs reduced the increased levels of blood glucose and glycated hemoglobin and improved plasma insulin levels. The safety of LTNPs was suggested by the histopathological studies.

In the *in vivo* comparison of ETNPs with LTNPs, it was found that ETNPs improved mitochondrial function in oxidative stress of diabetes than LTNPs or EUNPs or extract or LTNPs or LUNPs or lupeol. In addition to the improvement in mitochondrial function by ETNPs treatment, they had pronounced antidiabetic efficiency than EUNPs or extract or LTNPs or LUNPs or lupeol. ETNPs were found to be safe to use as assessed by *in vitro* cytotoxicity assessment and by histological studies.