The present study on “Effect of Sunflower seeds on Hypercholesterolemia, Fatty liver and fasting blood glucose in Diabetes Mellitus type 2 patients” was undertaken to explore the possibility of control of various deranged parameters in certain metabolic disorders like dyslipidaemia, Fatty Liver (grade 1), Diabetes Type 2. As per the study, the sunflower seeds were first roasted and then about 2gm of the sunflower seeds were given to the sample patients for a period of six months.

A comparative analysis of phenolic, tocopherol content and antioxidant activity was done for both roasted and non-roasted sunflower seeds to find out the effect of roasting on the sunflower seeds. The sunflower seeds both roasted and non-roasted showed a good antioxidant potential. A significant difference (p < 0.05) was observed amongst the antioxidant potential of roasted and non-roasted seeds. Although less but insignificant difference (p < 0.05) was observed amongst the total phenolic content of roasted and non-roasted seeds.

The incorporation of sunflower seeds in the diet for six months in the sample patients showed visible and significant reductions (p < 0.05) in various relative parameters. The reductions were in agreement with the statistical analysis. In this study, it has been found that the supplementation of 2 gm in the diets of sedentary men and women (age ranging from 45-55 yrs.) can lower concentrations of serum total cholesterol, triglycerides, LDL, FBS, SGOT, SGPT not only in patients who are on medications but also in ones who have not yet been advised any medication for the deranged levels respectively. Apart from these findings the HDL also known as the good cholesterol showed a good increase. It has been suggested that the consumption of up to 2 g sunflower seeds in roasted form has been considered safe. Also, in the given study it has been analysed that roasting does not hamper much of the seed’s antioxidant potential and capacity as much difference was not countered amongst the roasted and non-roasted seeds as far as the antioxidant capacity, phenolic content, tocopherol content, protein, fat content etc. are concerned.

Product formulation and development was also performed considering the nutritional attributes of sunflower seeds. Different flour blends were used to design and develop healthy sunflower based cookies. The result obtained was put to use for the
nutritional therapeutic purpose. The cookies made with different sunflower seeds enriched flour blends were T₁ - 100% wheat flour, T₂ - 80% wheat flour and 20% sunflower seed flour, T₃ - 70% wheat flour and 30% sunflower seed flour and T₄ - 60% wheat flour with 40% sunflower seed flour.

It was observed in functional analysis of the flour blends, T₄ (60% wheat flour with 40% sunflower seed flour) was found to have maximum water absorption capacity, bulk density and swelling power. The flour blend T₂ with 20% sunflower seed flour was found to be highest in oil absorption capacity. The results of the proximate composition analysis revealed that protein along with crude fiber and fat was also highest in T₄ with 13.95 per cent, 2.58 and 4.1 per cent respectively. The total phenolic content was found to be maximum in A₄ 179.06 mg/100 g. The antioxidant activity was also found to be highest in T₄.

In the physical analysis of the cookies made from the various flour blends, T₄ was observed to have maximum diameter whereas T₂ was found to have maximum height and T₁ was found to have maximum weight and spread ratio. The proximate analysis of the cookies showed that T₄ had maximum protein (12.95 per cent), fat (27.1 per cent) and crude fiber (2.45 per cent) whereas T₁ had maximum carbohydrate content (75.23 per cent). In antioxidant activity analysis maximum content was found in T₄. With the addition of sunflower flour the highest improvement was found in T₄.

The physicochemical and sensory evaluation of cookies, revealed that up to 20% substitution of wheat flour with sunflower seeds flour (T₂) produced acceptable cookies similar to the control (100% wheat flour) cookies. It showed the maximum score in colour (8.5), flavour (8.1), texture (8.1) and overall acceptability (8.3), taste (8.2). Hence, T₂ i.e. 20% sunflower seed flour was found to be most accepted in this study.

The second product formulation – the capsules also proved to be effective as about 42% of the sample patients opted to take the capsular form of the powdered seeds finding it easier to consume whereas the remaining 58% opted for the seeds in the natural form.

Thus in a nutshell, it can be concluded that sunflower seeds can be used as an adjuvant and an inordinate remedy to render control over the deranged biochemical parameters like cholesterol, triglycerides, LDL, FBS, SGOT and SGPT along with a good increase in HDL (the good cholesterol). In addition it was found that roasting did not hamper
much of its nutritional composition (as mentioned in table 6.4) hence it can be incorporated in light cooking and roasting recipes as well. Further, cookies enriched with sunflower seeds were developed for its efficient delivery and administration. Moreover preventing various metabolic disorders with nutritional intervention is therapeutic strategy that is widely being adopted.