LIST OF FIGURES

Figure no.	Title	Page no.
1.1	Vitamin D metabolism in the body	2
1.2	Role of vitamin D hormone in mineralizing the skeleton	5
1.3	Biological consequences of vitamin D deficiency in the body	6
1.4 (a)	Number of people with diabetes by IDF region, 2013	9
1.4 (b)	Expected increase in prevalence of diabetes	9
2.1	Chemical structures of vitamin D ₂ and vitamin D ₃	18
2.2	Schematic representation of the synthesis and metabolism of vitamin D	20
2.3	Major targets and actions of vitamin D ₃ on peripheral tissues	22
2.4	Risk factors for vitamin D deficiency	38
2.5	Signs and symptoms of vitamin D deficiency	39
2.6	Global incidence of vitamin D deficiency	41
2.7	Prevalence at risk of vitamin D deficiency defined as 25(OH)D <20 ng/ml by age and gender	41
2.8	Mean/median 25(OH)D values, by geographical region and country	43
2.9	Schematic representation of the major causes for vitamin D deficiency and potential health consequences	62
2.10	Diagramatic representation of etiology of T2DM	75
2.11	Barkers fetal programming hypothesis	77
2.12	Major complications of diabetes mellitus	79
2.13	IDF regions and global projections of the number of people with diabetes (20-79 years), 2013 and 2035	81
2.14	Comparison of the percentage increase in serum 25(OH)D levels	110
3.1	Experimental design phase I	116
3.2	Experimental design phase II (a)	117
3.3	Experimental design phase II (b & c)	119
3.4	Experimental design phase III	121
4.1.1	Percent energy (kcal) from macronutrients	156
4.1.2	Overall consumption pattern of vitamin D foods	163

4.1.3	Prevalence of fractures across age groups (%)	166
4.1.4	Genderwise sub-classification of vitamin D deficiency (%)	167
4.1.5	Agewise vitamin D status of the subjects (%)	169
4.1.6	Distribution of the subjects based on their vitamin D levels (%)	178
4.1.7	Distribution of the subjects based on vitamin D quartiles (%)	187
4.1.8 (a)	Prevalence of metabolic syndrome among the subjects (n, %)	193
4.1.8 (b)	Prevalence of metabolic syndrome across vitamin D status of the subjects (n, %)	193
4.2.1	Percent energy (kcal) from macronutrients	234
4.2.2	Serum vitamin D levels of the subjects across their milk consumption pattern (Mean \pm SD)	237
4.2.3	Genderwise sub-classification of vitamin D deficiency (%)	239
4.2.4	Prevalence of hypercholesterolemia across vitamin D levels of the subjects (n, %)	253
4.2.5	Prevalence of inflammation across vitamin D levels of the subjects (n, %)	253
4.2.6	Correlations (Pearson) between vitamin D levels and non-invasive parameters	268
4.2.7	Correlations (Pearson) between vitamin D levels and biochemical parameters	269
4.2.8	Vitamin D status of the subjects post supplementation (n, %)	274
4.2.9	Percent change in lipid profile of the supplementation group post supplementation	277
4.2.10	Impact of vitamin D supplementation on the prevalence of dyslipidemia & inflammation in the supplementation group	278
4.2.11	Percent change in iron status & thyroid hormones of the supplementation group post supplementation	281
4.2.12	Percent change in glycemic profile of the supplementation group post supplementation	281
4.2.13	Percent change in liver function tests of the supplementation group post supplementation	283
4.2.14	Percent change in kidney profile of the supplementation group post supplementation	283
4.2.15	Vitamin D status of the subjects at post & washout period	295
4.3.1	Vitamin D status of the subjects (%)	315
4.3.2	Sub-classification of vitamin D deficiency among the subjects (%)	315
4.3.3	Prevalence of metabolic syndrome among the subjects (%)	321