## LIST OF FIGURES

Figure No.	Title	Page no.
2.1	Stepwise process of the design and development of functional foods.	12
2.2	Scientific basis for enhanced structure-function or disease	14
2.2	risk-reduction claims	14
2.3	Chemical Structure of sucrose (left), inulin (center),	22
	oligofructose (right)	
2.4	Primary vegetable sources of inulin in the American Diet	24
2.5	Consumption pattern of curd, onion and garlic as prebiotic and probiotic foods	24
2.6	Basic gut anatomy. different regions within the gut are	40
	colonized by different types of microbial community, in	
	terms of both species diversity and actual numbers.	
2.7	The microbial concentrations in human intestine	40
2.8	Changes with age in number of bacteria in faeces	42
2.9	Schematic presentation of interactions between food,	43
	intestinal flora and host	
2.10	Schematic overview of colonic microflora and their health significance	44
2.11	Colonic bacteria and SCHFA related health effects of bifidobacteria	45
2.12	Pathogenic microflora suppression	47
2.13	Factual and hypothetical effects of short chain fatty acids	52
	(SCFAS) on colonic morphology and function	
2.14	Schematic diagram of the bioavailability of digestible	52
	carbohydrates and inulin	
2.15	Short chain fatty acids levels after 24 hours in vitro	54
	fermentation	
2.16	SCFA levels and ratios after 24 hours in vitro fermentation	55

igure No.	Title	Page no
2.17	Short chain fatty acid and gas production of individual NDO, polysaccharides, and their mixtures	56
2.18	Effect of inulin ingestion on lipid metabolism	58
0.10		<u></u>
2.19	Inhibition of pyruvate carboxylase by methyl malonyl CoA	61
	and succinyl CoA, and HMG CoA reductase by propionate	
	inhibition	
2.20	The modulation of gut microbiota by prebiotics treatment	62
	modulates the endogenous production of gut peptides	
	associated with energy homeostasis	
2.21	Normal colon mutual transformation via hyperproliferation	64
	and adenomas to carcinoma	
2.22	Reductase enzymes and their role in carcinogen formation	65
2.23	Effect of 20 g/d full consumption on Enterobacteriaceae	72
4.1	Experimental plan of the study	84
4.2	β- Fructan Determination	87
4.3	Steps for organoleptic evaluation	95
4.4 a	Selection of participants at baseline	100
4.4 b	Experimental plan for supplementation of fermented milk	101
4.5	Serial dilution technique along with steps of inoculation and	102
	incubation. Preparation and sterilization of media	
5.1.1.(i)	Chromatograms depicting standard for	121
`,	(a) blank (b) Fructose (c) glucose (d) Sucrose	
5.1.1.(ii)	Chromatograms depicting standard for	121
. ()	(a) blank (b) Fructose (c) glucose (d) Sucrose	
5.1.1.(iii)	Chromatograms depicting standard for	122
•	(a) blank (b) Fructose (c) glucose (d) Sucrose	
5.1.1.(iv)	Chromatograms depicting standard for(a) blank (b) Fructose	122
	(c) glucose (d) Sucrose	

Figure No.	Ditle	Page no
5.1.2	Chromatograms of the distribution of inulin	124
	chains in cereal grains (a) blank (b) Fructose (c) glucose	
	(d) Sucrose	
5.1.3	Chromtograms of the distribution of inulin chains in pulses	125
	and legumes (a) blank (b) Fructose (c) glucose (d) Sucrose	
5.1.4	Chromatograms of the distribution of inulin	127
	chains in fruits and vegetables (a) blank (b)Fructose (c)	
	glucose (d) Sucrose	
5.1.5	Chromatograms of the distribution of inulin chains in roots	128
	and tubers, spices (a) blank (b)Fructose (c) glucose (d)	
	Sucrose	
5.1.6	Chromatograms of the distribution of inulin chains in	129
	processed wheat products (a) blank (b)Fructose (c) glucose	
	(d) Sucrose	
5.2.1	Organoleptic attributes of bread substituted with varying	137
(a)-(f)	levels of inulin	
5.2.2	Scores for organoleptic attributes of cookies substituted	144
(a)-(f)	with varying levels of inulin	٠.
5.2.3	Scores for organoleptic attributes of chapati substituted	151
(a)-(f)	with varying levels of inulin	
5.2.4	Scores for organoleptic attributes of dhokla Substituted with	157
(a)-(d)	varying Levels of Inulin	
5.2.5	Scores for organoleptic attributes of potato bonda	163
(a)-(b)	substituted with varying levels of inulin	
5.2.6(a)-(d)	Scores for organoleptic attributes of porridge substituted	168
	with varying levels of inulin	
5.2.7(a)-(b)	Scores for organoleptic attributes of juice substituted with	173
	varying levels of inulin	
5.3.1.1	Life style pattern of older adults	189
5.3.1.2 (a)	Prevalence of abdominal obesity based on waist hip ratio	190

Figure No.	Title	Page no
5.3.1.2 (b)	Prevalence of abdominal obesity based on waist circumference	190
5.3.1.3	Percent participants under different categories of BMI classification	191
5.3.1.4	Percent participants at different stages of hypertension	191
5.3.1.5	Percent participants suffering from different degrees of anemia	193
5.3.1.6 a	Percent participants under different categories for total cholesterol	193
5.3.1.6 b	Percent participants under different categories for triglycerides	193
5.3.1.7	Depression status of institutionalized older adults	196
5.3.2.1	Lipid profile of male and female elderly subjects before and after probiotic fermented milk supplementation	202
5.3.2.2	Lipid profile of male and female elderly subjects before and after synbiotic fermented milk supplementation	202
5.3.2.3	Fasting blood glucose of male and female elderly subjects before and after probiotic and synbiotic fermented milk supplementation	205
5.3.2.4	Gut microflora of male and female elderly subjects before and after probiotic fermented milk supplementation	224
5.3.2.5	Gut microflora of male and female elderly subjects before and after synbiotic fermented milk supplementation	224
5.3.2.6	Correlation of total cholesterol and beneficial microorganisms (bifidobacteria and lactobacilli) after probiotic and synbiotic fermented milk supplementation fig. 5.3.2.7 correlation of total cholesterol and E.coli after probiotic and synbiotic fermented milk supplementation	227
5.3.2.7	Correlation of total cholesterol and e.coli after probiotic and synbiotic fermented milk supplementation	227
5.3.2.8	Correlation of biochemical parameters and beneficial organisms (bifidobacteria and lactobacilli)after synbiotic fermented milk supplementation	228