List of figures

Figures	Captions	Page No.
Fig. 1.1.	Flowchart of polyphenol classification	2
Fig. 1.2.	Major biosynthetic pathways for secondary metabolites	3
Fig.2.1.	Basic structure of hydroxybenzoic and hydroxycinnamic acid derivatives	14
Fig.2.2.	Basic structure of a flavonoid	15
Fig.2.3.	Shikimic acid pathway leading to synthesis of phenylalanine	16
Fig. 2.4.	Biosynthesis of hydroxycinnamic acids, hydroxybenzoic acids and flavonoids	17
Fig. 3.1.	Photograph of the studied fruit samples	49-50
Fig. 3.2.	Photoghraph of the studied vegetable samples.	51-52
Fig. 3.3.	RP-HPLC chromatogram of the fruit samples at 254 nm. (a) black jamun (b) litchi, (c) bogi jamun (d) amla, (e) hogplum, (f) pani jamun, (g) carambola, (h) poniol, (i) leteku, (j) pineapple, (k) olive, (l) Khasi mandarin and (m) watermelon.	62-65
Fig. 3.4.	RP-HPLC chromatograms of the raw and processed <i>kharua</i> brinjal samples at 254 nm. (a) raw, (b) microwave treated, (c) steam treated and (d) boiled	75
Fig. 3.5.	RP-HPLC chromatograms of the raw and processed banana blossom samples at 254 nm. (a) raw, (b) microwave treated, (c) steam treated and (d) boiled	76
Fig. 3.6.	RP-HPLC chromatogram of the raw and processed black eyed pea samples at 254 nm. (a) raw, (b) microwave treated, (c) steam treated and (d) boiled	77
Fig. 3.7.	RP-HPLC chromatogram of the raw and processed roselle leaves samples at 254 nm. (a) raw, (b) microwave treated, (c) steam treated and (d) boiled	78

Fig 4.1.	(a) pH, (b) Total solid content (°B), and (c) Viscosity of the raw	93-94
	juice feed samples for spray drying.	
Fig.4.2.	Particle size distribution of the spray dried juice powder against	95
	intensity. (a) Khasi mandarin (18-30 μ M), (b) carambola (53-104	
	μ M), (c) pineapple (0.2-7.2 μ M) and (d) watermelon (0.1-4 μ M)	
Fig. 4.3.	SEM image of the spray dried fruit juice powders. (a) Khasi	98
	mandarin, (b) carambola, (c) pineapple and (d) watermelon	
Fig. 5.1.	TPC of five fresh and treated fruit juices. (a) carambola, (b) black	114-115
	jamun, (c) watermelon (d) litchi and (e) pineapple.	
Fig. 5.2.	TFC of five fresh and treated fruit juices. (a) carambola, (b) black	115-116
	jamun, (c) watermelon (d) litchi and (e) pineapple	
Fig. 5.3.	FRAP of five fresh and treated fruit juices. (a) caram116-117bola, (b)	116-117
	black jamun, (c) watermelon (d) litchi and (e) pineapple.	•
Fig. 5.4.	DPPH activity of five fresh and treated fruit juices. (a) carambola, (b)	117-118
	black jamun, (c) watermelon (d) litchi and (e) pineapple	
Fig. 5.5.	RP-HPLC chromatogram of carambola juices. (a) fresh, (b)	122
	pasteurised, (c) microwaved at 600W (d) microwaved at 900W and	
	(e) sonicated at 254nm.	
Fig. 5.6.	RP-HPLC chromatogram of black jamun juices. (a) fresh, (b)	123
	pasteurised, (c) microwaved at 600W (d) microwaved at 900W and	
	(e) sonicated at 254nm.	
Fig. 5.7.	RP-HPLC chromatogram of watermelon juices. (a) fresh, (b)	124
	pasteurised, (c) microwaved at 600W (d) microwaved at 900W and	
	(e) sonicated at 254nm.	
Fig. 5.8.	RP-HPLC chromatogram of litchi juices. (a) fresh, (b) pasteurised,	125
	(c) microwaved at 600W (d) microwaved at 900W and (e) sonicated	
	at 254nm.	
Fig. 5.9.	RP-HPLC chromatogram of pineapple juices. (a) fresh, (b)	126
	pasteurised, (c) microwaved at 600W (d) microwaved at 900W and	
	(e) sonicated at 254nm.	

Fig.6.1.	3D graphic surface optimisation of three responses (a) TPC, (b)	143
	FRAP, and (c) DPPH	
Fig. 6. 2.	RP-HPLC chromatogram of (a) carambola juice and (b) polyphenol	146
	extract from carambola pomace at 254nm.	
Fig. 6.3.	SEM image of the surface morphology of the phenolic powder and	150
	microencapsulates.(a) Phenolic powder without maltodextrin, (b) FD	
	1:10, (c) FD 1:15, (d) FD 1:20, (e) SD 1:10, (f) SD 1:15, and (g) SD	
	1:20.	
Fig. 7.1.	Phenolic acid compositions determined by RP-HPLC of (a) PNPM	171
	(b) BGPL (c) KMPL (d) CMPM (e) WMPL and (f) BB fibre samples	
	at 254 nm.	
Fig. 7. 2	(a) Glucose adsorption capacity and (b) amylase inhibition of the	172
	fibre sample. PNPM- pineapple pomace; BGPL- Burmese grape peel;	
	KMPL- Khasi mandarin peel; CMPM- carambola pomace; WMPL-	
	watermelon and BB- banana blossom.	
Fig 8.1.	3D plot of the response variables (a) moisture content and (b) yield	188
Fig 8.2.	3D plot of the response variables (a) solubility and (b) bulk density	190
Fig 8.3.	3D plot of the response variable hygroscopicity	191
Fig. 8.4.	Particle size distribution of the beverage powder	194
Fig. 8.5.	SEM of spray dried powder mix fruit juice and carambola pomace	195
Fig. 9.1.	Histopathological study of the aorta and heart tissues of the Sprague	210
	Dawley rat (G1 is Group I; and GII is Group II)	
Fig. 9.2.	GCMS spectrum of ceacal matter of (a) Group I and (b) Group II rat;	211
	1= iso-valeric acid; 2= acetic acid; 3= propionic acid and 4= valeric	
	acid	