

Supplemental Materials

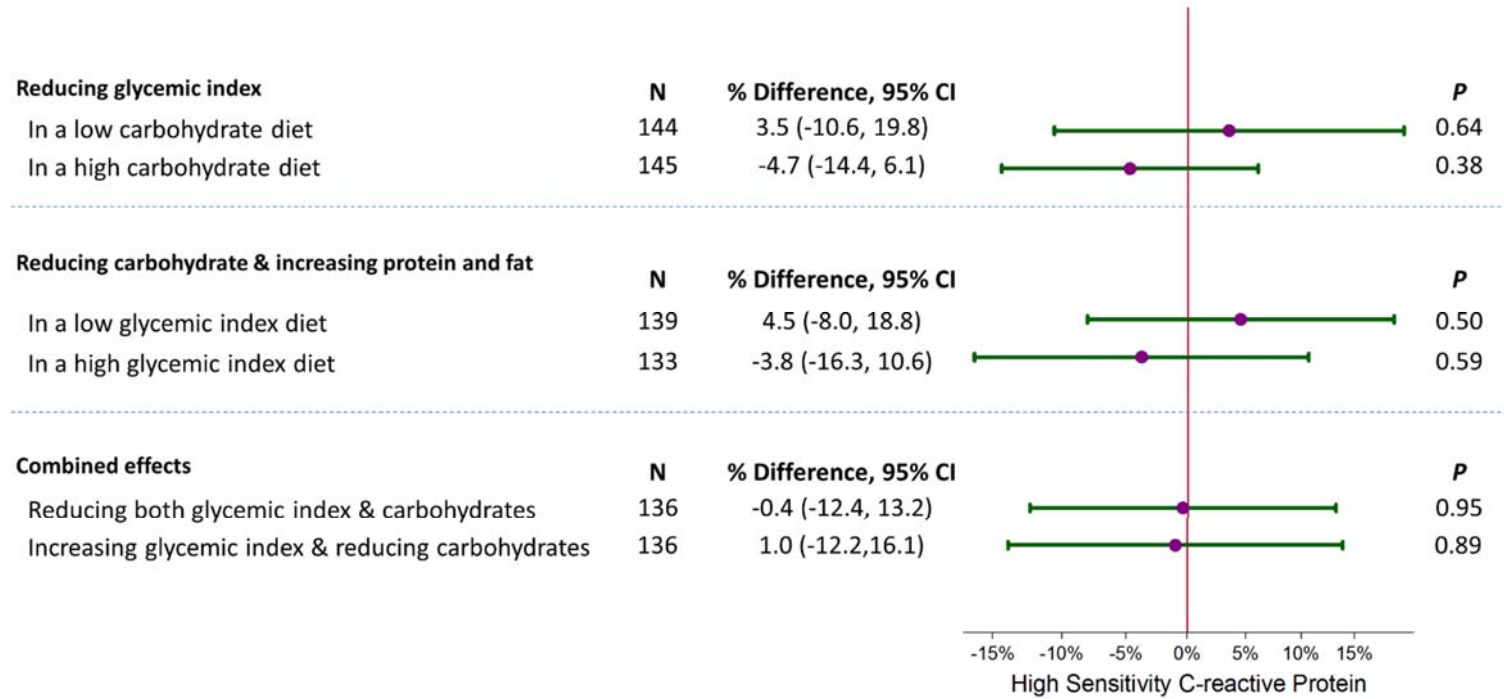
Supplement Figure S1

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Supplement Tables S1-S3

Supplemental Figure S1.

Percent Difference in High Sensitivity C-reactive Protein between Diets



Caption. Between diet comparisons and 95% confidence intervals of the percent difference in high sensitivity C-reactive protein measured at the end of each feeding period. The feeding periods are grouped by glycemic index comparisons (low versus high glycemic index), carbohydrate proportion (low versus high proportion), and changes in both glycemic and amount of carbohydrates, i.e. reductions in both or an increase in glycemic index while decreasing amount of carbohydrate.

Supplement Table S1. Comparison of glycated albumin or fructosamine between diets in strata of race, hypertension status, baseline triglycerides, body mass index, homeostasis model assessment (HOMA) of insulin resistance, baseline fasting glucose, baseline glycated albumin, and baseline fructosamine.*

	Baseline No.	Mean (95% Confidence Interval) Difference between Diets					
		Reducing GI in setting of a high carbohydrate diet		Reducing carbohydrate in setting of a high GI diet		Reducing both GI and carbohydrate simultaneously	
		Difference, 95% CI	<i>P</i>	Difference, 95% CI	<i>P</i>	Difference, 95% CI	<i>P</i>
Plasma Glycated albumin, %*							
Non-Hispanic							
White	65	-0.05 (-0.33, 0.23)	0.91	0.05 (-0.29, 0.38)	0.05	0.01 (-0.32, 0.34)	0.22
Black	79	-0.03 (-0.23, 0.17)		-0.36 (-0.60, -0.12)		-0.24 (-0.46, -0.02)	
Hypertension status							
No	116	0.03 (-0.15, 0.22)	0.24	-0.27 (-0.49, -0.04)	0.29	-0.13 (-0.32, 0.07)	0.95
Yes	40	-0.21 (-0.56, 0.15)		-0.04 (-0.41, 0.33)		-0.11 (-0.55, 0.32)	
Baseline Triglycerides, mg/dl							
≤ 83.8	77	0.02 (-0.21, 0.24)	0.63	-0.29 (-0.55, -0.04)	0.39	-0.20 (-0.46, 0.06)	0.41
> 83.8	79	-0.06 (-0.30, 0.17)		-0.13 (-0.42, 0.17)		-0.05 (-0.31, 0.22)	
Body mass index, kg/m ²							
25-29.9	68	0.02 (-0.18, 0.22)	0.60	-0.18 (-0.43, 0.07)	0.78	-0.07 (-0.33, 0.18)	0.65
30+	88	-0.07 (-0.31, 0.18)		-0.23 (-0.51, 0.05)		-0.16 (-0.42, 0.10)	
HOMA, units							
≤1.48	77	-0.04 (-0.28, 0.19)	0.88	-0.20 (-0.48, 0.09)	0.87	-0.12 (-0.37, 0.12)	0.94
>1.48	79	-0.02 (-0.24, 0.21)		-0.22 (-0.49, 0.04)		-0.13 (-0.41, 0.14)	
Fasting glucose, mg/dL							
<100	100	0.02 (-0.19, 0.23)	0.46	-0.19 (-0.43, 0.05)	0.75	-0.06 (-0.30, 0.17)	0.38
≥100	56	-0.11 (-0.36, 0.14)		-0.25 (-0.58, 0.07)		-0.23 (-0.53, 0.07)	
Glycated albumin, %							

≤14.8	65	-0.02 (-0.25, 0.21)	0.50	-0.02 (-0.28, 0.23)	0.20	-0.02 (-0.30, 0.26)	0.38
>14.8	65	0.09 (-0.14, 0.32)		-0.28 (-0.58, 0.01)		-0.19 (-0.44, 0.07)	
Fructosamine, μmol/L							
≤234.5	65	-0.05 (-0.31, 0.22)	0.36	-0.19 (-0.45, 0.07)	0.74	-0.08 (-0.36, 0.20)	0.85
>234.5	65	0.11 (-0.09, 0.31)		-0.13 (-0.42, 0.17)		-0.12 (-0.38, 0.14)	
Plasma Fructosamine, μmol/L*							
Non-Hispanic							
White	65	5.71 (1.71, 9.71)	0.08	0.49 (-4.80, 5.78)	0.25	2.14 (-2.64, 6.92)	0.03
Black	79	0.07 (-4.88, 5.01)		-3.61 (-8.18, 0.97)		-4.97 (-9.28, -0.66)	
Hypertension status							
No	116	1.47 (-2.33, 5.28)	0.30	-3.01 (-7.04, 1.01)	0.04	-2.84 (-6.47, 0.79)	0.13
Yes	40	5.12 (-0.75, 10.99)		4.34 (-1.62, 10.31)		2.55 (-3.50, 8.60)	
Baseline Triglycerides, mg/dl							
≤ 83.8	77	2.70 (-2.75, 8.16)	0.89	-1.63 (-6.73, 3.47)	0.74	-0.26 (-5.08, 4.56)	0.46
> 83.8	79	2.28 (-0.94, 5.50)		-0.43 (-4.89, 4.03)		-2.57 (-6.42, 1.27)	
Body mass index, kg/m ²							
25-29.9	68	4.44 (-0.22, 9.10)	0.29	0.23 (-4.31, 4.77)	0.49	-1.52 (-5.79, 2.75)	0.98
30+	88	0.96 (-3.45, 5.37)		-2.15 (-7.09, 2.80)		-1.41 (-5.91, 3.09)	
HOMA, units							
≤1.48	77	1.66 (-3.40, 6.72)	0.66	-3.36 (-8.35, 1.64)	0.21	-2.41 (-7.35, 2.52)	0.56
>1.48	79	3.12 (-0.90, 7.14)		0.98 (-3.61, 5.57)		-0.54 (-4.50, 3.43)	
Fasting glucose, mg/dL							
<100	100	4.12 (-0.25, 8.49)	0.13	-1.22 (-5.48, 3.05)	0.94	-0.55 (-4.75, 3.66)	0.45
≥100	56	-0.62 (-4.84, 3.60)		-0.88 (-6.62, 4.85)		-2.92 (-7.45, 1.61)	
Glycated albumin, %							
≤14.8	65	4.45 (-0.16, 9.07)	0.21	1.88 (-3.15, 6.91)	0.16	-0.92 (-5.71, 3.87)	0.75
>14.8	65	-0.04 (-5.47, 5.38)		-3.55 (-9.18, 2.08)		-2.10 (-7.29, 3.09)	

Fructosamine, $\mu\text{mol/L}$							
≤ 234.5	65	5.35 (1.58, 9.11)	0.09	3.54 (-0.60, 7.68)	0.03	1.24 (-2.96, 5.43)	0.13
> 234.5	65	-0.56 (-6.29, 5.17)		-4.67 (-10.70, 1.36)		-4.04 (-9.43, 1.36)	

Note: HOMA represents homeostasis model assessment.

*This population was restricted to non-hemolyzed specimens due to the effects of hemolysis on the glycated albumin and fructosamine assays.

While only 130 persons contributed baseline data, 156 contributed at least 2 dietary comparisons.

Supplement Table S1. Comparison of glycated albumin or fructosamine between diets in strata of race, hypertension status, baseline triglycerides, body mass index, homeostasis model assessment (HOMA) of insulin resistance, baseline fasting glucose, baseline glycated albumin, and baseline fructosamine.* Continued.

Baseline	Mean (95% Confidence Interval) Difference between Diets						
	No.	Reducing GI in setting of a low carbohydrate diet Difference, 95% CI	P	Reducing carbohydrate in setting of a low GI diet Difference, 95% CI	P	Increasing GI while reducing carbohydrate simultaneously Difference, 95% CI	P
Plasma Glycated albumin, %*							
Non-Hispanic							
White	65	-0.04 (-0.30, 0.22)	0.35	0.06 (-0.24, 0.36)	0.13	0.10 (-0.23, 0.42)	0.02
Black	79	0.12 (-0.08, 0.33)		-0.21 (-0.38, -0.03)		-0.33 (-0.51, -0.15)	
Hypertension status							
No	116	0.14 (-0.01, 0.29)	0.32	-0.16 (-0.33, 0.01)	0.22	-0.30 (-0.49, -0.11)	0.04
Yes	40	-0.07 (-0.48, 0.33)		0.09 (-0.28, 0.46)		0.17 (-0.23, 0.56)	
Baseline Triglycerides, mg/dl							
≤ 83.8	77	0.09 (-0.10, 0.29)	0.94	-0.22 (-0.43, -0.01)	0.14	-0.31 (-0.54, -0.08)	0.16
> 83.8	79	0.08 (-0.16, 0.32)		0.02 (-0.21, 0.25)		-0.06 (-0.32, 0.20)	
Body mass index, kg/m ²							
25-29.9	68	0.10 (-0.10, 0.31)	0.84	-0.09 (-0.33, 0.14)	1.00	-0.20 (-0.41, 0.01)	0.85
30+	88	0.07 (-0.15, 0.30)		-0.09 (-0.31, 0.12)		-0.17 (-0.43, 0.09)	
HOMA, units							
≤1.48	77	0.07 (-0.13, 0.27)	0.91	-0.08 (-0.32, 0.16)	0.81	-0.15 (-0.42, 0.11)	0.76
>1.48	79	0.09 (-0.14, 0.33)		-0.11 (-0.32, 0.09)		-0.21 (-0.44, 0.02)	
Fasting glucose, mg/dL							
<100	100	0.12 (-0.08, 0.33)	0.51	-0.08 (-0.29, 0.12)	0.78	-0.20 (-0.43, 0.03)	0.75
≥100	56	0.02 (-0.21, 0.25)		-0.13 (-0.37, 0.12)		-0.15 (-0.41, 0.12)	

Glycated albumin, %							
≤14.8	65	0.01 (-0.20, 0.21)	0.56	0.00 (-0.24, 0.25)	0.03	0.00 (-0.22, 0.22)	0.09
>14.8	65	0.09 (-0.12, 0.30)		-0.28 (-0.50,-0.06)		-0.37 (-0.61,-0.13)	
Fructosamine, μmol/L							
≤234.5	65	0.11 (-0.07, 0.30)	0.50	-0.03 (-0.30, 0.23)	0.26	-0.14 (-0.40, 0.11)	0.60
>234.5	65	0.01 (-0.23, 0.24)		-0.23 (-0.43,-0.02)		-0.23 (-0.45,-0.01)	
Plasma Fructosamine, μmol/L*							
Non-Hispanic							
White	65	1.65 (-2.38, 5.68)	0.25	-3.57 (-7.55, 0.42)	0.58	-5.22 (-9.64,-0.80)	0.58
Black	79	-1.36 (-4.70, 1.97)		-5.03 (-8.46,-1.61)		-3.67 (-7.02,-0.33)	
Hypertension status							
No	116	0.17 (-3.04, 3.39)	0.43	-4.32 (-7.33,-1.30)	0.54	-4.49 (-7.62,-1.36)	0.24
Yes	40	-1.79 (-5.59, 2.00)		-2.57 (-7.22, 2.07)		-0.78 (-6.10, 4.55)	
Baseline Triglycerides, mg/dl							
≤ 83.8	77	1.37 (-1.95, 4.69)	0.18	-2.96 (-6.56, 0.64)	0.47	-4.33 (-7.99,-0.67)	0.56
> 83.8	79	-2.14 (-6.02, 1.74)		-4.85 (-8.38,-1.32)		-2.71 (-6.66, 1.24)	
Body mass index, kg/m ²							
25-29.9	68	-1.75 (-5.52, 2.02)	0.35	-5.96 (-9.66,-2.26)	0.17	-4.21 (-8.44, 0.02)	0.69
30+	88	0.74 (-2.79, 4.26)		-2.37 (-5.84, 1.10)		-3.11 (-6.63, 0.41)	
HOMA, units							
≤1.48	77	0.94 (-2.68, 4.57)	0.35	-4.07 (-7.42,-0.73)	0.87	-5.02 (-8.48,-1.55)	0.30
>1.48	79	-1.52 (-5.10, 2.07)		-3.66 (-7.46, 0.15)		-2.14 (-6.24, 1.96)	
Fasting glucose, mg/dL							
<100	100	0.67 (-2.26, 3.60)	0.35	-4.66 (-7.85,-1.48)	0.37	-5.33 (-8.30,-2.37)	0.10
≥100	56	-2.04 (-6.86, 2.78)		-2.30 (-6.37, 1.78)		-0.26 (-5.53, 5.00)	

Glycated albumin, %						
≤14.8	65	-2.81 (-6.07, 0.46)	0.14	-5.38 (-9.16,-1.59)	0.24	-2.57 (-6.43, 1.29)
>14.8	65	1.45 (-3.07, 5.96)		-2.06 (-6.25, 2.13)		-3.51 (-8.12, 1.10)
						0.77
Fructosamine, μmol/L						
≤234.5	65	-2.30 (-5.83, 1.23)	0.31	-4.11 (-8.15,-0.07)	0.82	-1.81 (-5.75, 2.14)
>234.5	65	0.64 (-3.81, 5.08)		-3.47 (-7.52, 0.57)		-4.11 (-8.71, 0.49)
						0.46

Note: HOMA represents homeostasis model assessment.

*This population was restricted to non-hemolyzed specimens due to the effects of hemolysis on the glycated albumin and fructosamine assays.

While only 130 persons contributed baseline data, 156 contributed at least 2 dietary comparisons.

Supplement Table S2. Pearson correlation coefficient and linear associations between glycated albumin, fructosamine, and diabetes risk factors assessed at baseline (N =130)

	Plasma Glycated Albumin, %			Plasma Fructosamine, $\mu\text{mol/L}$		
	<i>r</i>	β	<i>p</i> *	<i>r</i>	β	<i>p</i> *
Plasma glycated albumin, %	1.00	-	-	0.58	8.26	<0.001
Plasma fructosamine, $\mu\text{mol/L}$	0.58	0.014	0.001	1.00	-	-
Body mass index, kg/m^2	-0.29	-0.090	<0.001	-0.23	-0.96	0.005
Waist circumference, cm	-0.32	-0.034	<0.001	-0.21	-0.35	0.02
HDL cholesterol, mg/dL	0.06	-0.013	0.15	-0.06	-0.16	0.26
LDL cholesterol, mg/dL	0.10	0.002	0.62	0.11	0.05	0.32
Triglycerides, mg/dL	-0.14	0.0003	0.90	-0.15	-0.04	0.22
Serum fasting glucose, mg/dL	-0.01	-0.004	0.65	0.16	0.22	0.11
Serum fasting insulin, $\mu\text{U/mL}$	-0.18	-0.038	0.08	-0.06	-0.16	0.63
HOMA, units	-0.16	-0.115	0.13	-0.02	-0.07	0.95

*P-value for ordinary least squares coefficient (β) adjusted for age, sex, and race/ethnicity

Note: HDL represents high density lipoprotein cholesterol; LDL represents low density lipoprotein cholesterol; HOMA represents homeostasis model assessment of insulin resistance

Supplement Table S3. Number and mean (SD) of glycemic markers and high sensitivity C-reactive protein at the end of baseline and each dietary intervention

	Baseline		High Carbohydrate/High Glycemic Index		High Carbohydrate/Low Glycemic Index		Low Carbohydrate/High Glycemic Index		Low Carbohydrate/Low Glycemic Index	
	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)
Serum glucose, mg/dL	159	97.3 (13.7)	146	94.3 (13.5) ^a	149	96.0 (14.7)	147	95.1 (11.9)	149	97.5 (13.8)
Serum insulin, μ U/mL	159	7.7 (5.8)	146	6.8 (5.0)	149	7.8 (6.9)	147	7.1 (5.6)	149	7.5 (7.1)
Plasma glycated albumin*, %-point	131	14.9 (1.6)	120	14.9 (1.6)	129	14.8 (1.6) ^a	128	14.6 (1.5) ^c	129	14.6 (1.4) ^c
Plasma fructosamine*, μ mol/L	131	235.6 (22.1)	120	232.9 (24.7) ^a	129	235.5 (21.6)	128	232.1 (19.7) ^b	129	230.9 (20.9) ^c
High sensitivity C-reactive protein, mg/L	159	3.2 (4.0)	146	3.2 (3.8)	149	3.0 (3.6)	146	3.3 (4.2)	149	3.8 (7.5)

*Excluding hemolyzed specimens.

a $P \leq 0.05$ when compared to baseline

b $P \leq 0.01$ when compared to baseline

c $P \leq 0.001$ when compared to baseline