

Supplementary Material

Manuscript Title: Carbohydrate-rich Meals Have no Impact on Post-prandial Lipid Parameters in Indians with Subclinical and Overt Primary Hypothyroidism

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Supplementary Tables

Supplementary tables 1–6 present the results of post-hoc analyses of all the parameters evaluated in this study in patients with overt primary hypothyroidism, subclinical hypothyroidism and healthy euthyroid controls.

Supplementary Table-1: Profile of fasting and post mixed meal glycaemic, insulin resistance and biochemical parameters in patients with overt primary hypothyroidism as compared to subclinical hypothyroidism

Parameter	Overt primary hypothyroidism (n=33)	Subclinical hypothyroidism (n=161)	p value
Age, years	35.5 ± 12.67	40.7 ± 13.05	0.038
Sex, male:female	4:29	28:133	0.457
BMI, kg/m ²	24.9 ± 4.72	26.29 ± 4.49	0.109
FT3, pg/mL	3.01 ± 1.19	3.53 ± 0.65	<0.001
FT4, ng/dL	0.66 ± 0.35	0.92 ± 0.19	<0.001
TSH, mIU/mL*	33.1 (10.95–160)	7.42 (6.07–9.17)	<0.001
TPO Ab titer, U/L*	436.0 (130–819)	34.60 (7.3–300.2)	<0.001
Fasting glucose, mg/dL*	88 (80–101.5)	94 (87–105)	0.927
1 h PM glucose, mg/dL*	85 (74.5–98.5)	96 (84–115)	0.654
2 h PM glucose, mg/dL*	87 (78–104)	96 (85–106)	0.598
4 h PM glucose, mg/dL*	83 (80–95)	89 (85–96)	0.894
HOMA-IR	2.35 (1.93–4.24)	3.14 (1.91–3.81)	0.616
HOMA-β	146.88 (61.33–221.23)	130.62 (80.43–209.7)	0.224
Fasting insulin, U/L*	10.8 (9.1–18.35)	12.3 (8.75–15.7)	0.418
1h PM insulin, U/L*	54.3 (37.75–72.15)	48 (29.85–71.7)	0.889
2h PM insulin, U/L*	25.5 (18.62–55.1)	31.9 (21.2–67.9)	0.112
4h PM insulin, U/L*	12.6 (4.55–18.45)	14.4 (8.4–21.7)	0.581
Creatinine, mg/dL*	0.6 (0.6–0.8)	0.6 (0.6–0.8)	0.507
SGPT, IU/L*	25 (15–39)	34 (27–46.5)	0.030
Uric acid, mg/dL*	4.1 (3.5–4.95)	5.0 (4.1–5.85)	0.368

All normally distributed continuous variables expressed as mean ± standard deviation;

*all non-normally distributed variables expressed as median (25th–75th percentile); p<0.05

considered statistically significant; P-value has been calculated using analysis of variance (ANOVA).

BMI = body mass index; FT3 = free triiodothyronine; FT4 = free tetraiodothyronine; h = hour;

HOMA-β = homeostatic model of estimated beta cell function; HOMA-IR = homeostatic model for

assessment of insulin resistance; PM = post mixed meal; SGPT = serum glutamic-pyruvic

transaminase; TPO Ab = thyroid peroxidase anti-thyroid antibody; TSH = thyroid stimulating

hormone.

Supplementary Table-2: Profile of fasting and post mixed meal glycaemic, insulin resistance and biochemical parameters in patients with overt primary hypothyroidism as compared to euthyroid controls

Parameter	Overt primary hypothyroidism (n=33)	Euthyroid controls (n=40)	p value
Age, years	35.5 ± 12.67	40.55 ± 12.35	0.091
Sex, male:female	4:29	3:37	0.504
BMI, kg/m ²	24.9 ± 4.72	25.90 ± 3.99	0.329
FT3, pg/mL	3.01 ± 1.19	3.38 ± 0.46	0.076
FT4, ng/dL	0.66 ± 0.35	1.06 ± 0.2	<0.001
TSH, mIU/mL*	33.1 (10.95–160)	3.6 (2.76–4.44)	<0.001
TPO Ab titer, U/L*	436.0 (130–819)	15.55 (9.0–52.6)	<0.001
Fasting glucose, mg/dL*	88 (80–101.5)	95 (84.5–99)	0.802
1 h PM glucose, mg/dL*	85 (74.5–98.5)	93 (81.25–105.75)	0.883
2 h PM glucose, mg/dL*	87 (78–104)	95 (84.25–105.25)	0.836
4 h PM glucose, mg/dL*	83 (80–95)	87.5 (82.25–93.75)	0.860
HOMA-IR	2.35 (1.93–4.24)	2.72 (2.18–3.88)	0.804
HOMA-β	146.88 (61.33–221.23)	147.11 (99.87–247.83)	0.866
Fasting insulin, U/L*	10.8 (9.1–18.35)	12.1 (9.7–15.52)	0.384
1h PM insulin, U/L*	54.3 (37.75–72.15)	46.1 (33.67–75.1)	0.926
2h PM insulin, U/L*	25.5 (18.62–55.1)	33.6 (25.17–52.2)	0.305
4h PM insulin, U/L*	12.6 (4.55–18.45)	15.35 (9.3–25.57)	0.569
Creatinine, mg/dL*	0.6 (0.6–0.8)	0.7 (0.6–0.7)	0.875
SGPT, IU/L*	25 (15–39)	27.5 (21.5–49.75)	0.122
Uric acid, mg/dL*	4.1 (3.5–4.95)	4.6 (4.22–5.47)	0.092

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considered statistically significant; P-value has been calculated using analysis of variance (ANOVA).

BMI = body mass index; FT3 = free triiodothyronine; FT4 = free tetraiodothyronine; h = hour;

HOMA-β = homeostatic model of estimated beta cell function; HOMA-IR = homeostatic model for

assessment of insulin resistance; PM = post mixed meal; SGPT = serum glutamic-pyruvic

transaminase; TPO Ab = thyroid peroxidase anti-thyroid antibody; TSH = thyroid stimulating

hormone.

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Supplementary Table-3: Profile of fasting and post mixed meal glycaemic, insulin resistance and biochemical parameters in patients with subclinical hypothyroidism as compared to euthyroid controls

Parameter	Subclinical hypothyroidism (n=161)	Euthyroid controls (n=40)	p value
Age, years	40.7 ± 13.05	40.55 ± 12.35	0.945
Sex, male:female	28:133	3:37	0.121
BMI, kg/m ²	26.29 ± 4.49	25.90 ± 3.99	0.615
FT3, pg/mL	3.53 ± 0.65	3.38 ± 0.46	0.167
FT4, ng/dL	0.92 ± 0.19	1.06 ± 0.2	<0.001
TSH, mIU/mL*	7.42 (6.07–9.17)	3.6 (2.76–4.44)	0.002
TPO Ab titer, U/L*	34.60 (7.3–300.2)	15.55 (9.0–52.6)	0.062
Fasting glucose, mg/dL*	94 (87–105)	95 (84.5–99)	0.713
1 h PM glucose, mg/dL*	96 (84–115)	93 (81.25–105.75)	0.432
2 h PM glucose, mg/dL*	96 (85–106)	95 (84.25–105.25)	0.765
4 h PM glucose, mg/dL*	89 (85–96)	87.5 (82.25–93.75)	0.881
HOMA-IR	3.14 (1.91–3.81)	2.72 (2.18–3.88)	0.756
HOMA-β	130.62 (80.43–209.7)	147.11 (99.87–247.83)	0.243
Fasting insulin, U/L*	12.3 (8.75–15.7)	12.1 (9.7–15.52)	0.968
1h PM insulin, U/L*	48 (29.85–71.7)	46.1 (33.67–75.1)	0.808
2h PM insulin, U/L*	31.9 (21.2–67.9)	33.6 (25.17–52.2)	0.566
4h PM insulin, U/L*	14.4 (8.4–21.7)	15.35 (9.3–25.57)	0.994
Creatinine, mg/dL*	0.6 (0.6–0.8)	0.7 (0.6–0.7)	0.471
SGPT, IU/L*	34 (27–46.5)	27.5 (21.5–49.75)	0.945
Uric acid, mg/dL*	5.0 (4.1–5.85)	4.6 (4.22–5.47)	0.485

All normally distributed continuous variables expressed as mean ± standard deviation;

*all non-normally distributed variables expressed as median (25th–75th percentile); p<0.05 considered statistically significant; P-value has been calculated using analysis of variance (ANOVA).

BMI = body mass index; FT3 = free triiodothyronine; FT4 = free tetraiodothyronine; h = hour;

HOMA-β = homeostatic model of estimated beta cell function; HOMA-IR = homeostatic model for assessment of insulin resistance; PM = post mixed meal; SGPT = serum glutamic-pyruvic

transaminase; TPO Ab = thyroid peroxidase anti-thyroid antibody; TSH = thyroid stimulating hormone.

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Supplementary Table-4: Profile of fasting and post mixed meal extended lipid profile parameters in patients with overt primary hypothyroidism as compared to subclinical hypothyroidism

Parameter	Overt Primary Hypothyroidism (n=33)	Subclinical Hypothyroidism (n=161)	p value**
TC (mg/dl) *	180 [144-201]	165 [151 – 184.5]	0.096
1h PM TC (mg/dl) *	172 [139.5-198]	161 [146 – 180]	0.077
2h PM TC (mg/dl) *	165 [138-196]	159 [145- 176]	0.120
4h PM TC (mg/dl) *	175 [143-196]	163 [149 – 181]	0.087
LDL-C (mg/dl) *	109 [87-144]	98 [83 – 113]	0.011
1h PM LDL-C (mg/dl) *	104 [80.5-128]	91 [76 - 103]	0.022
2h PM LDL-C (mg/dl) *	98 [83.5-119]	84 [69.5 – 99.5]	0.003
4h PM LDL-C (mg/dl) *	92 [73-113]	78 [67 – 96.5]	0.008
HDL-C (mg/dl)	43.54±9.61	44.59±9.82	0.575
1h PM HDL-C (mg/dl)	42.5±9.3	43.22±9.04	0.696
2h PM HDL-C (mg/dl)	41.36±9.18	42.49±8.36	0.510
4h PM HDL-C (mg/dl)	42.03±9.33	42.88±9.5	0.638
TG (mg/dl) *	118 [83-176.5]	126 [82.5 – 168]	0.692
1h PM TG (mg/dl) *	128 [107-180.5]	133 [91 – 179.5]	0.869
2h PM TG (mg/dl) *	151 [112-202]	164.8 [113.5 – 212.5]	0.504
4h PM TG (mg/dl) *	171 [136-233]	182.5 [136.5 – 259.5]	0.471
Lp-a (mg/dl)*	13.12 [6.28-22.0]	10.12 [5.26 – 21.47]	0.629
1h PM Lp-a (mg/dl) *	12.50 [6.2-21.41]	10.01 [5.02 – 21.13]	0.488
2h PM Lp-a (mg/dl) *	11.95 [6.38-20.72]	10.16 [5.02 – 20.68]	0.553
4h PM Lp-a (mg/dl) *	11.82 [6.72-20.72]	9.12 [4.8 – 20.47]	0.508
Apo-A1 (mg/dl) *	131.23 [115.78-155.7]	144.47 [127.72 – 164.59]	0.099
1h PM apo-A1 (mg/dl) *	129.57 [109.34-157.02]	139.53 [123.3 – 159.1]	0.099
2h PM apo-A1 (mg/dl) *	124.2 [107.8-143.9]	136.23 [121.23 – 156.42]	0.010
4h PM apo-A1 (mg/dl) *	122.93 [109.39-148.41]	137.56 [121.01 – 157.38]	0.010
Apo-B (mg/dl)	99.7 [90.52 -130.59]	107.32 [90 - 120.8]	0.262
1h PM apo-B (mg/dl)	97.56 [89.2- 136.5]	105.84 [89.94 – 118.28]	0.160
2h PM apo-B (mg/dl)	97.72 [88.46 – 123.47]	105.01 [88.19 – 119.70]	0.748
4h PM apo-B (mg/dl)	98.03 [88.95 – 119.83]	105.48 [89.76 – 118.95]	0.612

PM = post meal; TC = total cholesterol; TG = triglycerides; apo-A1 = apolipoprotein-A1; apo-B = apolipoprotein-B; Lp-a = Lipoprotein-a

All normally distributed continuous variables expressed as mean ± standard deviation;

*all non-normally distributed variables expressed as median [25th-75th percentile]

**p<0.05 considered statistically significant

Supplementary Table-5: Profile of fasting and post mixed meal extended lipid profile parameters in patients with overt primary hypothyroidism as compared to euthyroid controls

Parameter	Overt Primary Hypothyroidism (n=33)	Euthyroid Controls (n=40)	p value**
TC (mg/dl) *	180 [144-201]	154.5 [141 – 177.74]	0.020
1h PM TC (mg/dl) *	172 [139.5-198]	152 [139.7 – 171.5]	0.017
2h PM TC (mg/dl) *	165 [138-196]	150 [138.5 – 168.75]	0.019
4h PM TC (mg/dl) *	175 [143-196]	149 [140.2 – 168.8]	0.012
LDL-C (mg/dl) *	109 [87-144]	92 [77 – 108.2]	0.010
1h PM LDL-C (mg/dl) *	104 [80.5-128]	86 [66.7 -92.75]	0.010
2h PM LDL-C (mg/dl) *	98 [83.5-119]	79.5 [66 -92.7]	0.004
4h PM LDL-C (mg/dl) *	92 [73-113]	75.5 [62.1 – 91.5]	0.005
HDL-C (mg/dl)	43.54±9.61	42.5±12.01	0.843
1h PM HDL-C (mg/dl)	42.5±9.3	42.5±12.01	0.995
2h PM HDL-C (mg/dl)	41.36±9.18	41.5±12.26	0.958
4h PM HDL-C (mg/dl)	42.03±9.33	41.25±12.93	0.772
TG (mg/dl) *	118 [83-176.5]	104.5 [81 – 161.5]	0.736
1h PM TG (mg/dl) *	128 [107-180.5]	117 [97 – 176]	0.888
2h PM TG (mg/dl) *	151 [112-202]	135.5 [106 – 193.75]	0.979
4h PM TG (mg/dl) *	171 [136-233]	161 [116 -263.25]	0.998
Lp-a (mg/dl)*	13.12 [6.28-22.0]	6.82 [4.26 -12.35]	0.008
1h PM Lp-a (mg/dl) *	12.50 [6.2-21.41]	6.81 [4.28 – 12.3]	0.005
2h PM Lp-a (mg/dl) *	11.95 [6.38-20.72]	6.77 [4.36 – 12.0]	0.006
4h PM Lp-a (mg/dl) *	11.82 [6.72-20.72]	6.91 [4.4 – 11.7]	0.010
Apo-A1 (mg/dl) *	131.23 [115.78-155.7]	142.25 [125.73 – 151.72]	0.298
1h PM apo-A1 (mg/dl) *	129.57 [109.34-157.02]	135.53 [122.57 – 146.78]	0.439
2h PM apo-A1 (mg/dl) *	124.2 [107.8-143.9]	136.35 [125.2 – 148.9]	0.058
4h PM apo-A1 (mg/dl) *	122.93 [109.39-148.41]	134.53 [122.59 – 149.88]	0.126
Apo-B (mg/dl)	99.7 [90.52 -130.59]	100.27 [85.32 – 117.58]	0.162
1h PM apo-B (mg/dl)	97.56 [89.2- 136.5]	97.21 [85.21 – 112.67]	0.092
2h PM apo-B (mg/dl)	97.72 [88.46 – 123.47]	97.76 [81.55 – 111.05]	0.443
4h PM apo-B (mg/dl)	98.03 [88.95 – 119.83]	97.22 [84.22 – 109.08]	0.222

PM = post meal; TC = total cholesterol; TG = triglycerides; apo-A1 = apolipoprotein-A1; apo-B = apolipoprotein-B; Lp-a = Lipoprotein-a

All normally distributed continuous variables expressed as mean± standard deviation;

*all non-normally distributed variables expressed as median [25th-75th percentile]

**p<0.05 considered statistically significant

Supplementary Table-6: Profile of fasting and post mixed meal extended lipid profile parameters in patients with subclinical hypothyroidism as compared to euthyroid controls

Parameter	Subclinical Hypothyroidism (n=161)	Euthyroid Controls (n=40)	p-value**
TC (mg/dl) *	165 [151 – 184.5]	154.5 [141 – 177.74]	0.143
1h PM TC (mg/dl) *	161 [146 – 180]	152 [139.7 – 171.5]	0.128
2h PM TC (mg/dl) *	159 [145- 176]	150 [138.5 – 168.75]	0.089
4h PM TC (mg/dl) *	163 [149 – 181]	149 [140.2 – 168.8]	0.064
LDL-C (mg/dl) *	98 [83 – 113]	92 [77 – 108.2]	0.188
1h PM LDL-C (mg/dl) *	91 [76 - 103]	86 [66.7 -92.75]	0.098
2h PM LDL-C (mg/dl) *	84 [69.5 – 99.5]	79.5 [66 -92.7]	0.460
4h PM LDL-C (mg/dl) *	78 [67 – 96.5]	75.5 [62.1 – 91.5]	0.184
HDL-C (mg/dl)	44.59±9.82	42.5±12.01	0.393
1h PM HDL-C (mg/dl)	43.22±9.04	42.5±12.01	0.683
2h PM HDL-C (mg/dl)	42.49±8.36	41.5±12.26	0.561
4h PM HDL-C (mg/dl)	42.88±9.5	41.25±12.93	0.369
TG (mg/dl) *	126 [82.5 – 168]	104.5 [81 – 161.5]	0.397
1h PM TG (mg/dl) *	133 [91 – 179.5]	117 [97 – 176]	0.722
2h PM TG (mg/dl) *	164.8 [113.5 – 212.5]	135.5 [106 – 193.75]	0.454
4h PM TG (mg/dl) *	182.5 [136.5 – 259.5]	161 [116 -263.25]	0.443
Lp-a (mg/dl)*	10.12 [5.26 – 21.47]	6.82 [4.26 -12.35]	0.013
1h PM Lp-a (mg/dl) *	10.01 [5.02 – 21.13]	6.81 [4.28 – 12.3]	0.010
2h PM Lp-a (mg/dl) *	10.16 [5.02 – 20.68]	6.77 [4.36 – 12.0]	0.011
4h PM Lp-a (mg/dl) *	9.12 [4.8 – 20.47]	6.91 [4.4 – 11.7]	0.018
Apo-A1 (mg/dl) *	144.47 [127.72 – 164.59]	142.25 [125.73 – 151.72]	0.659
1h PM apo-A1 (mg/dl) *	139.53 [123.3 – 159.1]	135.53 [122.57 – 146.78]	0.470
2h PM apo-A1 (mg/dl) *	136.23 [121.23 – 156.42]	136.35 [125.2 – 148.9]	0.803
4h PM apo-A1 (mg/dl) *	137.56 [121.01 – 157.38]	134.53 [122.59 – 149.88]	0.440
Apo-B (mg/dl)	107.32 [90 - 120.8]	100.27 [85.32 – 117.58]	0.344
1h PM apo-B (mg/dl)	105.84 [89.94 – 118.28]	97.21 [85.21 – 112.67]	0.217
2h PM apo-B (mg/dl)	105.01 [88.19 – 119.70]	97.76 [81.55 – 111.05]	0.439
4h PM apo-B (mg/dl)	105.48 [89.76 – 118.95]	97.22 [84.22 – 109.08]	0.239

PM = post meal; TC = total cholesterol; TG = triglycerides; apo-A1 = apolipoprotein-A1; apo-B = apolipoprotein-B; Lp-a = Lipoprotein-a

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