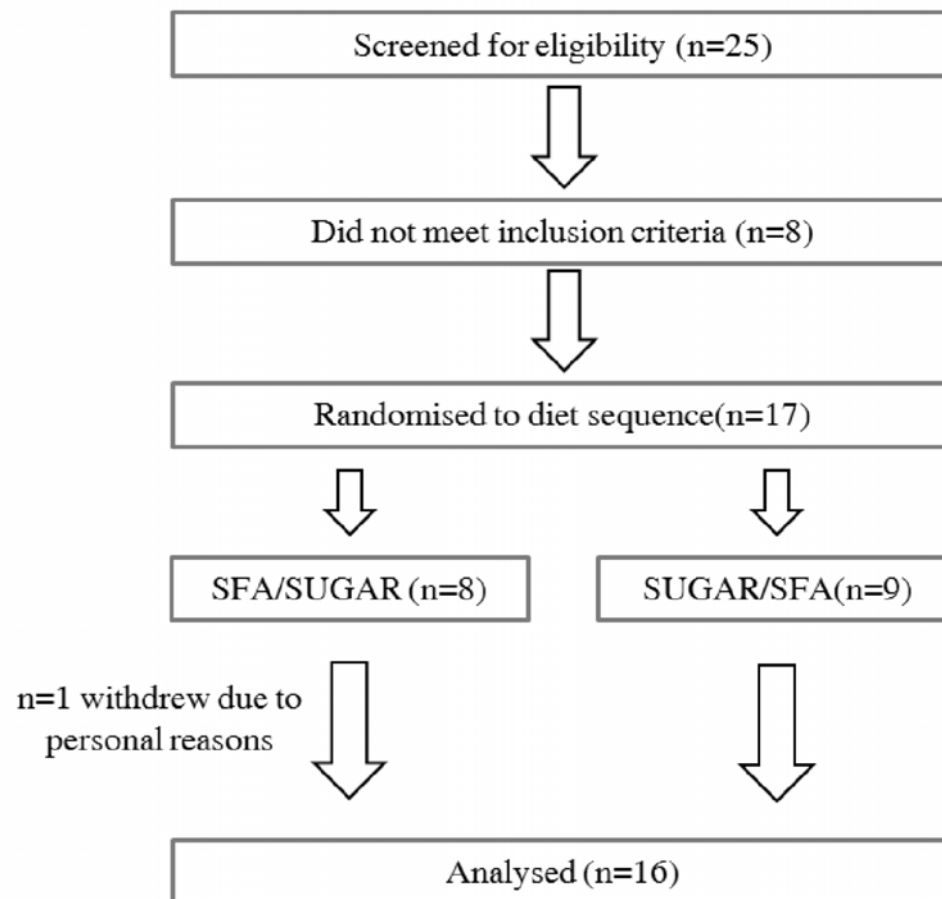


SUPPLEMENTARY DATA

Supplementary Figure 1. Flow diagram of participant pathways.



SUPPLEMENTARY DATA

Supplementary Table 1. Self-reported dietary intakes during the interventions.

	Pre-SFA		SFA		Pre-SUGAR		SUGAR	
	Grams	%TE	Grams	%TE	Grams	%TE	Grams	%TE
Carbohydrates	249±22	46±2	239±17	35±1	246±18	46±2	374±18*	62±2*
Free sugars	54±10	9±1	44±5	6±1	44±7	7±1	133±11*	23±23*
Protein	90±4	17±1	94±3	14±1	90±7	17±1	86±5	15±1
Fat	83±4	34±1	140±7	46±1	90±7	35±2	52±5*	19±2*
SFA	32±3	13±1	62±4	21±1	35±4	13±1	17±2*	6±1*
MUFA	28±2	11±2	45±3	15±2	32±2	12±1	18±2*	7±1*
PUFA	12±1	5±1	17±2	6±1	13±1	5±1	9±1*	3±1*
Alcohol	15±3	5±1	18±4	5±1	17±6	5±2	13±4	4±1
Energy intake (kcal)	2221±95		2697±126		2297±125		2405±88 [†]	

Data are presented as means ± SEM. n=15 SFA and n=13 SUGAR. * $p < 0.05$ SFA vs SUGAR

SUPPLEMENTARY DATA

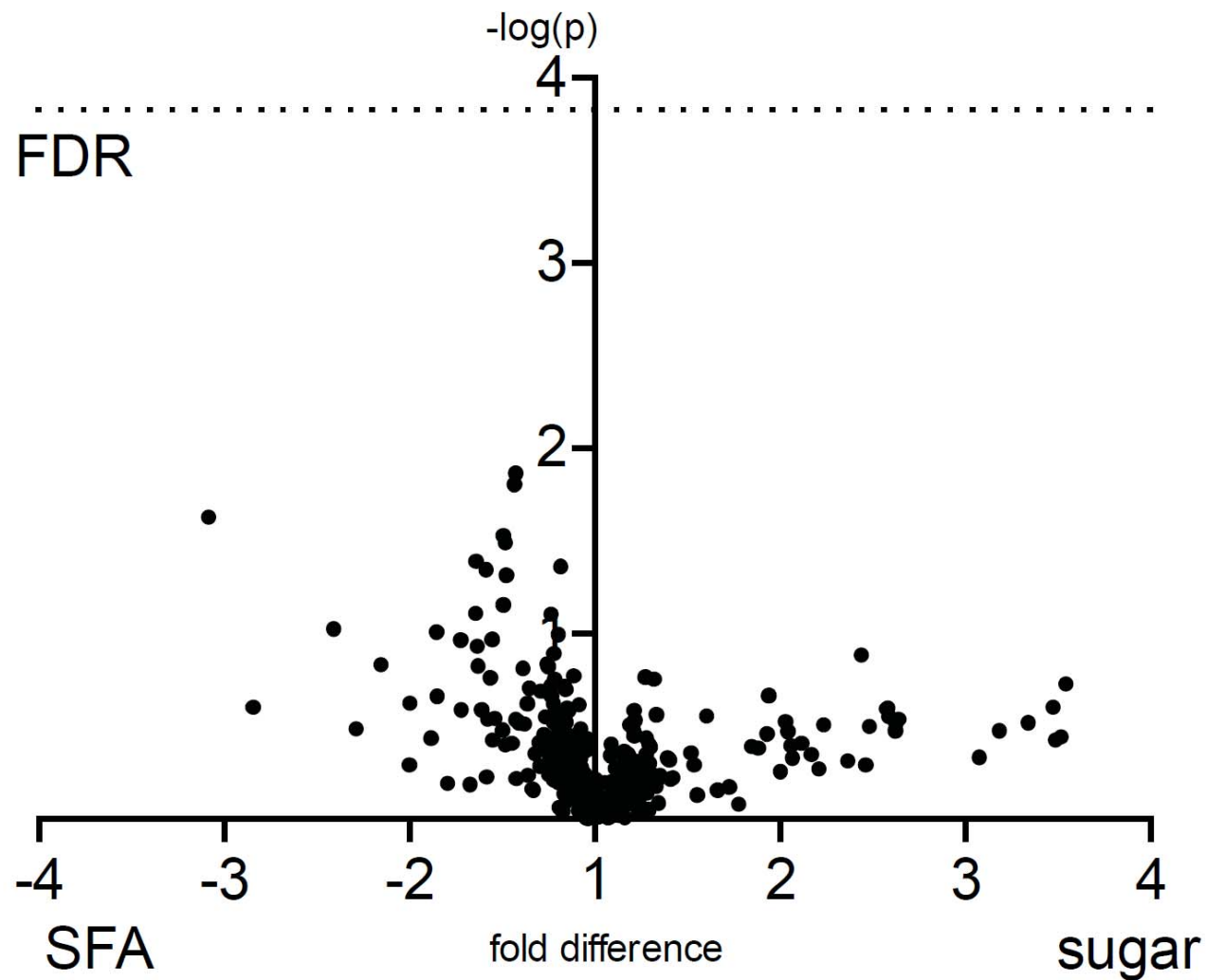
Supplementary Table 2. Fasting VLDL-TAG FA composition at the end of each dietary intervention phase.

FATTY ACID	SFA	SUGAR
	Mol%	Mol%
14:0	1.8±0.3	1.8±0.2
15:0	0.5±0.1	0.3±0.1*
16:0	27.5±0.6	26.8±1.0
16:1n-7	3.4±0.2	4.0±0.3
17:0	1.1±0.3	0.7±0.2
18:0	4.5±0.3	3.7±0.2
18:1n-9	45.8±1.5	46.8±1.1
18:1n-7	3.1±0.2	3.2±0.1
18:2n-6	11.6±1.4	11.8±1.0

Data are presented as means ± SEM. n = 12. * p<0.05 SFA vs SUGAR.

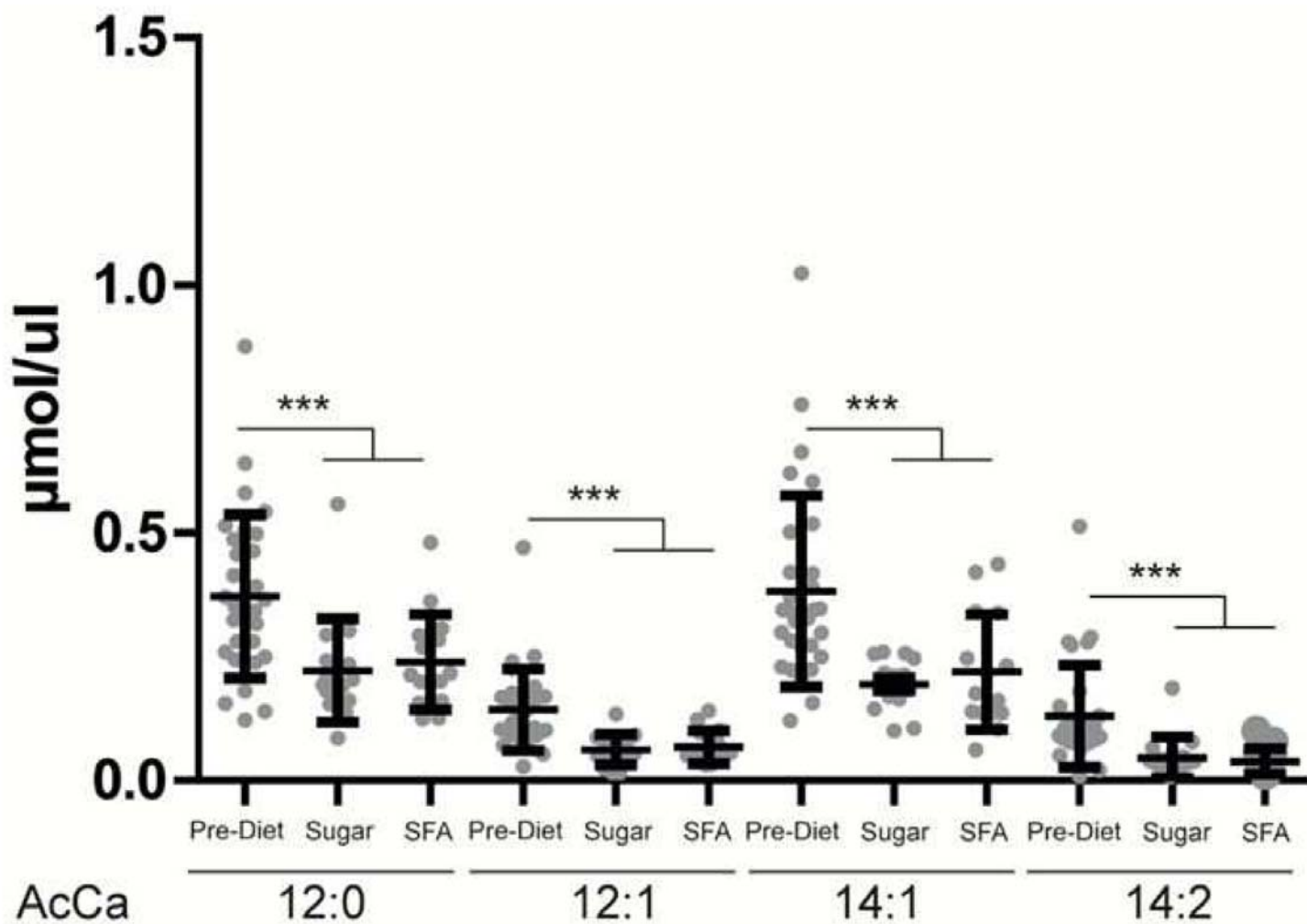
SUPPLEMENTARY DATA

Supplementary Figure 2. Relative difference in the plasma lipidomics profile between the SFA and sugar supplemented group (n=16). 337 identified lipid species passed the quality criteria. The volcano plot shows the relative changes to baseline between the SFA and the sugar group. The FDR corrected p-value was $p = -\log(3.8)$ (dotted line). None of the identified lipid species reached significance in this comparison.



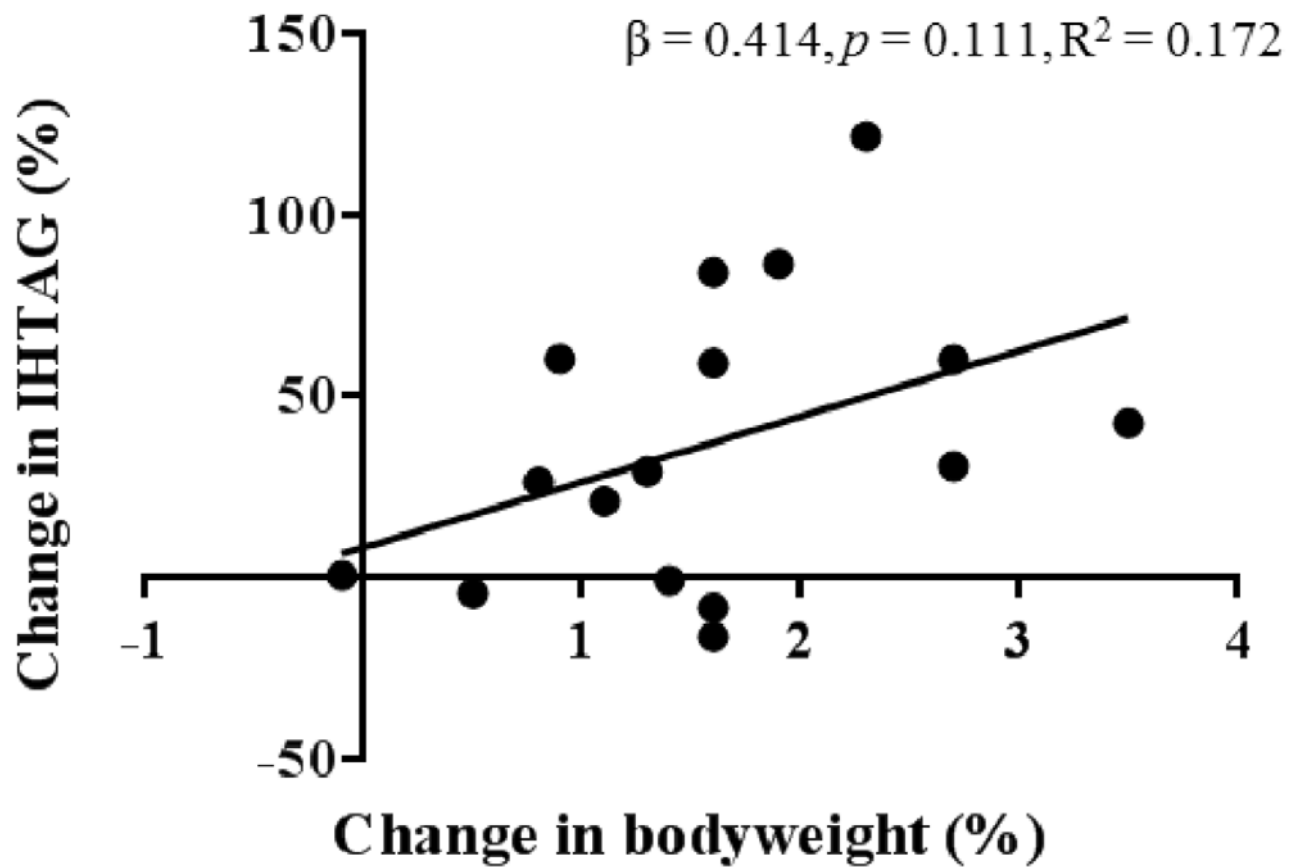
SUPPLEMENTARY DATA

Supplementary Figure 3. Differences in plasma acyl carnitines between pre-diet, sugar and SFA group. Ac carnitines were similarly lower in both groups compared to controls. No significant differences were seen between the sugar and the SFA group (n=16). *** p<0.001



SUPPLEMENTARY DATA

Supplementary Figure 4. Linear regression model to determine the relationship between change in body weight (%) and change in IHTAG (%) in response to a saturated fat (SFA) enriched diet. n=16



SUPPLEMENTARY DATA

Supplementary Figure 5. Systemic concentrations of total (A), and specific bile acid species (B) after consumption of a saturated fat (SFA), or free-sugar (SUGAR) enriched diet for 4-weeks. Data are presented as means \pm SEM. n=15.

