SUPPLEMENTAL MATERIAL

Table S1. Associations of total and individual branched-chain amino acids and outcomes of interest, stratified by sex.

Outcome	BCAA	Sex	Univariable Model		Multivariable Model	
			Beta/OR (95% CI)	P-value	Beta/OR (95% CI)	P-value
Body Mass Index (BMI)	Total	Female	0.28 (0.21-0.35)	$3x10^{-14}$	0.15 (0.08-0.22)	$1x10^{-5}$
		Male	0.20 (0.13-0.26)	$5x10^{-10}$	0.10 (0.04-0.16)	$6x10^{-4}$
	Valine	Female	0.28 (0.21-0.35)	$3x10^{-15}$	0.15 (0.09-0.22)	$7x10^{-6}$
		Male	0.22 (0.16-0.28)	$2x10^{-12}$	0.13 (0.07-0.19)	$1x10^{-5}$
	Leucine	Female	0.23 (0.16-0.30)	$9x10^{-11}$	0.13 (0.06-0.19)	$2x10^{-4}$
		Male	0.14 (0.08-0.20)	$5x10^{-6}$	0.05 (-0.01-0.11)	0.08
	Isoleucine	Female	0.20 (0.13-0.27)	$2x10^{-8}$	0.10 (0.04-0.17)	0.002
		Male	0.16 (0.09-0.22)	$8x10^{-7}$	0.09 (0.03-0.14)	0.003
Hepatic Steatosis	Total	Female	1.83 (1.53-2.19)	$3x10^{-11}$	1.56 (1.29-1.89)	$5x10^{-6}$
		Male	1.53 (1.29-1.82)	$2x10^{-6}$	1.40 (1.16-1.69)	$4x10^{-4}$
	Valine	Female	1.79 (1.50-2.14)	$1x10^{-10}$	1.53 (1.26-1.86)	$1x10^{-5}$
		Male	1.51 (1.27-1.80)	$3x10^{-6}$	1.37 (1.14-1.66)	0.001
	Leucine	Female	1.66 (1.40-1.98)	$6x10^{-9}$	1.42 (1.18-1.71)	$2x10^{-4}$
		Male	1.41 (1.19-1.67)	$6x10^{-5}$	1.30 (1.09-1.55)	0.004
	Isoleucine	Female	1.72 (1.46-2.05)	$5x10^{-10}$	1.53 (1.28-1.84)	$3x10^{-6}$
		Male	1.48 (1.25-1.75)	$6x10^{-6}$	1.39 (1.16-1.67)	$3x10^{-4}$
Continuous EAT Volume	Total	Female	0.12 (0.05-0.19)	0.001	0.10 (0.03-0.17)	0.007
		Male	0.03 (-0.05-0.11)	0.5	-	-
	Valine	Female	0.10 (0.03-0.17)	0.008	0.08 (0.01-0.15)	0.03
		Male	0.02 (-0.06-0.10)	0.7	-	-
	Leucine	Female	0.13 (0.07-0.20)	$2x10^{-4}$	0.11 (0.04-0.18)	0.002
		Male	0.06 (-0.02-0.14)	0.1	-	-
	Isoleucine	Female	0.08 (0.01-0.15)	0.03	0.07 (0.00-0.14)	0.04
		Male	-0.01 (-0.09-0.07)	0.7	-	-

Dichotomous EAT Volume	Total	Female	1.27 (1.09-1.48)	0.002	1.20 (1.02-1.43)	0.03
		Male	1.08 (0.93-1.27)	0.3	-	-
	Valine	Female	1.20 (1.04-1.40)	0.01	1.14 (0.96-1.34)	0.1
		Male	1.04 (0.89-1.21)	0.7	-	-
	Leucine	Female	1.33 (1.15-1.56)	$2x10^{-4}$	1.26 (1.07-1.50)	0.007
		Male	1.17 (1.00-1.37)	0.05	1.15 (0.97-1.37)	0.1
	Isoleucine	Female	1.17 (1.01-1.36)	0.04	1.14 (0.98-1.34)	0.1
		Male	1.00 (0.85-1.17)	0.99	-	-
Obstructive Coronary Artery Disease (oCAD)	Total	Female	1.40 (1.14-1.72)	0.001	1.31 (1.03-1.64)	0.02
		Male	0.92 (0.77-1.10)	0.4	-	-
	Valine	Female	1.27 (1.02-1.58)	0.03	1.16 (0.90-1.46)	0.2
		Male	0.92 (0.76-1.09)	0.3	-	-
	Leucine	Female	1.48 (1.21-1.82)	$1x10^{-4}$	1.39 (1.10-1.75)	0.004
		Male	0.95 (0.80-1.12)	0.6	-	-
	Isoleucine	Female	1.38 (1.13-1.68)	0.001	1.33 (1.07-1.65)	0.009
		Male	0.92 (0.77-1.10)	0.4	-	-
High Risk Plaque	Total	Female	1.01 (0.81-1.24)	0.9	-	-
		Male	0.96 (0.81-1.13)	0.6	-	-
	Valine	Female	0.95 (0.76-1.18)	0.7	-	-
		Male	0.97 (0.82-1.15)	0.7	-	-
	Leucine	Female	1.06 (0.85-1.30)	0.6	-	-
		Male	1.02 (0.87-1.20)	0.8	-	-
	Isoleucine	Female	1.05 (0.84-1.28)	0.7	-	-
		Male	0.83 (0.69-0.99)	0.05	-	-
High Risk Plaque (without oCAD)	Total	Female	0.89 (0.67-1.16)	0.4	-	-
		Male	1.03 (0.82-1.26)	0.8	-	-
	Valine	Female	0.90 (0.68-1.17)	0.4	-	-
		Male	1.05 (0.85-1.29)	0.6	-	-

	Leucine	Female	0.93 (0.70-1.21)	0.6	-	-
		Male	1.10 (0.89-1.34)	0.4	-	-
	Isoleucine	Female	0.85 (0.62-1.12)	0.3	-	-
		Male	0.82 (0.64-1.03)	0.1	-	-

OR: odds ratio; 95% CI: 95% confidence interval; EAT: epicardial adipose tissue. Dichotomous EAT is defined as above or at or below the median, continuous EAT is in standard deviation units. Effect size is per one standard deviation change in the branched chain amino acid. Multivariable model adjusted for: diabetes, age, race, sex, LDL and HDL cholesterol, metabolic syndrome, and body mass index [BMI]. BMI and continuous EAT reported as betas, while all other outcomes are reported as odds ratios.

Table S2. Analysis of effects of individual covariables between branched-chain amino acids with phenotypes that were not significant in multivariable models.

Outcome	BCAA	Covariable	OR/Beta (95% CI)	P-value
Obstructive Coronary Artery Disease	Total	**Sex**	**1.09 (0.95-1.24)**	**0.2**
		HDL-C	**1.09 (0.95-1.25)**	**0.2**
		Diabetes	**1.14 (1.00-1.29)**	**0.05**
		Metabolic Syndrome	1.15 (1.01-1.31)	0.03
		LDL-C	1.18 (1.03-1.33)	0.01
		Race	1.19 (1.05-1.35)	0.007
		BMI	1.21 (1.06-1.37)	0.004
		Age	1.23 (1.08-1.40)	0.001
	Valine	**Sex**	**1.04 (0.91-1.19)**	**0.6**
		HDL-C	**1.04 (0.91-1.20)**	**0.6**
		Diabetes	**1.09 (0.96-1.25)**	**0.2**
		Metabolic Syndrome	**1.11 (0.97-1.26)**	**0.1**
		LDL-C	**1.14 (1.00-1.29)**	**0.05**
		Race	1.15 (1.01-1.30)	0.04
		BMI	1.17 (1.02-1.34)	0.02
		Age	1.18 (1.04-1.35)	0.01
	Leucine	**HDL-C**	**1.12 (0.98-1.28)**	**0.09**
		Sex	**1.13 (0.99-1.28)**	**0.07**
		Diabetes	1.15 (1.01-1.31)	0.03
		Metabolic Syndrome	1.17 (1.03-1.33)	0.02
		LDL-C	1.19 (1.04-1.35)	0.008
		Race	1.2 (1.06-1.36)	0.005
		BMI	1.22 (1.07-1.39)	0.002
		Age	1.24 (1.09-1.41)	0.001
	Isoleucine	**Sex**	**1.09 (0.95-1.24)**	**0.2**

		HDL-C	**1.1 (0.96-1.25)**	**0.1**
		Diabetes	1.14 (1.00-1.29)	0.04
		Metabolic Syndrome	1.15 (1.01-1.3)	0.03
		LDL-C	1.17 (1.04-1.33)	0.01
		Race	1.18 (1.04-1.33)	0.008
		BMI	1.19 (1.05-1.35)	0.007
		Age	1.23 (1.08-1.39)	0.001
Dichotomous EAT Volume	Total	**BMI**	**1.11 (1.00-1.24)**	**0.05**
		Metabolic Syndrome	1.13 (1.02-1.26)	0.03
		HDL-C	1.15 (1.04-1.29)	0.01
		Diabetes	1.17 (1.05-1.30)	0.004
		Sex	1.18 (1.06-1.31)	0.003
		LDL-C	1.18 (1.07-1.32)	0.002
		Race	1.20 (1.08-1.33)	0.001
		Age	1.25 (1.12-1.40)	5×10^{-5}
	Valine	**BMI**	**1.06 (0.95-1.18)**	**0.3**
		Metabolic Syndrome	**1.08 (0.97-1.20)**	**0.2**
		HDL-C	**1.10 (0.99-1.22)**	**0.09**
		Diabetes	1.12 (1.01-1.24)	0.04
		Sex	1.12 (1.01-1.25)	0.04
		LDL-C	1.13 (1.02-1.26)	0.02
		Race	1.15 (1.03-1.28)	0.01
		Age	1.19 (1.07-1.32)	0.001
Continuous EAT Volume	Total	**BMI**	**0.05 (0.00-0.10)**	**0.08**
		Metabolic Syndrome	0.06 (0.01-0.11)	0.03
		HDL-C	0.07 (0.02-0.13)	0.008
		Sex	0.08 (0.02-0.13)	0.005
		Diabetes	0.08 (0.02-0.13)	0.004

		LDL-C	0.09 (0.03-0.14)	0.001
		Race	0.09 (0.04-0.14)	6×10^{-4}
		Age	0.12 (0.07-0.17)	7×10^{-6}
	Valine	**BMI**	**0.03 (-0.02-0.08)**	**0.3**
		Metabolic Syndrome	**0.04 (-0.01-0.09)**	**0.1**
		HDL-C	0.06 (0.00-0.11)	0.04
		Sex	0.06 (0.01-0.11)	0.03
		Diabetes	0.06 (0.01-0.11)	0.02
		LDL-C	0.07 (0.02-0.12)	0.008
		Race	0.08 (0.03-0.13)	0.003
		Age	0.10 (0.05-0.15)	1×10^{-4}

OR: Odds ratio; 95% CI: 95% confidence interval; oCAD: obstructive coronary artery disease; EAT: epicardial adipose tissue. Betas reported for continuous EAT volume. ORs, betas and p-values reflect the BCAA term in the model when adjusting for only the covariable listed. Bolded rows indicate covariables whose model inclusion alone resulted in a non-significant ($p \geq 0.05$) BCAA term.