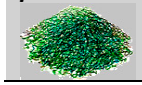
TableS1. Effects on energy expenditure and hypothesized mechanisms to induce weight loss

Food	Main active compound(s)	Effect(s) on EE	Mechanisms of action	References
Green coffee (Coffea canephora, Coffea Arabica) 	Caffeine, chlorogenic acid	Enhanced thermogenesis Increased REE Browning of WAT Increased fatty acids oxidation	Up-regulation of UCP1 and BAT-selective regulatory genes Activation of cAMP β2- and β3-adrenergic receptors stimulation Up-regulation of AMPK Antagonism of TRPV-4	[55]**** [57]** [58]**** [59]* [60] [61]**** [63]* [62]* [64]**
Green Tea (Camellia sinensis) 	Catechins, caffeine	Enhanced thermogenesis Increased EE Increased fat oxidation	Inhibition of phosphodiesterase enzymes Up-regulation of the gene expressions of UCPs Inhibition of norepinephrine degradation with increased SNS activity Stimulation of substrates in Cori cycle and free fatty acid-triglyceride cycle Activation of AMPK Increased glycolysis and ATP turnover	[68]* [69]* [70] [71]* [72]* [73]** [74]**/*** [75]*** [76]*
Cocoa and dark chocolate 	Caffeine, theobromine, polyphenols	Increased thermogenesis in liver and in WAT Increased mitochondrial biogenesis Fatty acid oxidation	Increased expression of thermogenic genes and release of free-fatty acids Induced expression of UCPs, PGC-1α and AMPKα Adenosine receptor blockage Stimulation of basal and noradrenaline-induced lipolysis Activation of AMPK	[79]** [80]* [81] [82]**** [83] [84]* [85]* [86] [87] [88] [90]* [91] [92]*
Yerba Mate (Ilex Paraguariensis) 	Polyphenols, alkaloids, triterpenoids, flavonoids, chlorogenic acid	Increased REE Increased fatty acids oxidation Inhibition of adipogenesis Increased AEE Enhanced thermogenesis in WAT Reduced fatty acids synthesis in WAT	Up-regulation of AMPK, Down-regulation of genes *Creb-1* and *C/EBPα* Preferential use of fatty acids as energy substrate Activation of mitochondrial genesis expression of UCPs	[63]* [95]* [96] [97]** [98]** [99] [100] [101]

Bitter Orange (Citrus Aurantium) 	Alkaloids (synephrine, octopamine) Flavonoids (hesperidin, naringin, limonene, tangaretin	Enhanced thermogenesis in WAT reduced fatty acids synthesis in WAT Increased REE and DIT Increased mitochondrial biogenesis	Enhanced expression of UCPs	[104]* [105]* [106]* [107]** [108]** [109]* [111] [112]
Ginger (*Zingiber officinale*) 	Zingerone	Enhanced thermogenesis Increased DIT Enhanced BAT function Activated WAT browning Increased mitochondrial biogenesis Increased fatty acid catabolism	Activation of AMPK signaling in WAT Activation of TRPV1 channels (adrenaline releasing) Activation of the sirtuin-1 (SIRT1)/AMPK/ PGC-1α pathways Transcriptional regulation of energy metabolizing proteins Activation of the PPARδ pathway	[117] [118] [119] [120] [121 [122]
Turmeric, (*Curcuma longa*) 	Curcumin, turmerone	Enhanced thermogenesis Enhanced lipolysis	Activation of AMPK with increased UCP1 expression Increased mitochondrial biogenesis Increased expression of β3- adrenoreceptors (and norepinephrine plasma levels) Upregulation of the cAMP/PKA/CREB pathway	[129] [130] [132]
Cinnamon 	Cinnamaldehyde	Enhanced thermogenesis Increased EE	Increased expression of UCP1 in BAT Activation of phospho-AMPK Regulation of cAMP dependent protein kinase/p38 MAPK-dependent pathway Activation of the TRPA1 (adrenalin secretion)	[136] [137]** [138]** [140] [142] [143] [144] [145]
Chilli pepper (*Capsicum species*) 	Capsaicinoids (capsaicin and dihydro-capsaicin), capsinoids (capsiate, dihydro-capsiate, nordihydro-capsiate)	Enhanced thermogenesis enhanced EE Activation and recruitment of BAT Increased EE decrease RQ reduction of the decrease in DIT and REE during hypocaloric diet	Up-regulation of the expression of SIRT1 and PGC-1α with increased expression of UCP1 and bone morphogenetic protein 8b Stimulation of the SNS and the catecholamine secretion from adrenal gland Activation of TRPV1 and stimulation of the SNS	[19]* [137]** [151]* [152]* [153]* [154]* [155]** [156] [157]*

Garcinia Cambogia 	Hydroxy-citric acid, anthones, benzophenones	Increased BEE increased fat oxidation decreased *de novo* lipogenesis	Activation of the adiponectin-AMPK signalling pathway Regulation of thyroid hormone levels Down-regulation of ATP-citrate lyase	[159]* [160]* [161]* [162]** [163]*** [164]*** [166] [167]
Guarana ***(Paullinia cupana)*** 	Caffeine, polyphenols, theobromine, theophylline	Increased thermogenesis Increased BEE Inhibited adipogenesis	Induced BAT expansion Increased mitochondrial biogenesis Enhanced UCP1expression AMPK activation	[176]** [177]*** [178] [179]
Brassicaceae **(or Cruciferae)** 	Glucoraphanin (hydrolyzed to the biologically active sulforaphane)	Enhanced thermogenesis increased mitochondrial biogenesis function enhanced EE browning of WAT	Up-regulation of the Nrf2/SIRT1/PGC-1α signalling Enhanced UCP1 expression in beige adipocytes	[182] [183] [185] [186] [187] [188]
Nuts 	Flavonoids, MUFA, PUFA, Vitamins	Increased DIT Increased BEE		[24]* [51]** [192]* [193]*** [194]**
Apple cider vinegar 	Acetic acid	Enhanced thermogenesis and fatty acids oxidation	Regulation of α2-AMPK/PPARα-mediated pathway with up-regulation of the expression of genes acetyl-CoA oxidase, carnitine palmitoyl transferase-1 and UCP2	[198]
Spirulina (*Arthrospira platensis and maxima*) 		No data on EE		

*Review including trials on humans with acute and/or chronic administration of product(s)
** Trial on humans after acute administration of product(s)
*** Trial on humans after chronic administration of product(s)
**** Observational study on humans after acute administration of product(s)
Abbreviations: AEE: activity-induced energy expenditure, AMPK: adenosine monophosphate activated protein kinase, ATP: adenosine triphosphate, BAT: brown adipose tissue, BEE: basal energy expenditure, cAMP: cyclic adenosine monophosphate, CREB: cAMP response element-binding protein , DIT: diet-induced thermogenesis, EE: energy expenditure, MAPK: mitogen-activated protein kinase, MUFA: monounsaturated fatty acids, Nrf2: nuclear factor erythroid 2-related factor 2 , PGC-1α: PPARγ coactivator-1 α, PPAR: proliferator-activated receptor, PKA: protein kinase A, PUFA: polyunsaturated fatty acids, REE: resting energy expenditure, RQ: respiratory quotient, SIRT1: sirtuin 1, SNS: sympathetic nervous system, TRPA1: Transient Receptor Potential Ankyrin 1, TRPV: transient receptor potential vanilloid, UCP: uncoupling protein, WAT: white adipose tissue.