### Table S1: Search strategy for Ovid MEDLINE®

| Searches                                                                                     | Results |
|--------------------------------------------------------------------------------------------|---------|
| exp Plants/ or exp plant extracts/ or Dietary Supplements/ or Plants, Medicinal/ or exp coffee/ or exp teas, herbal/ or exp Teas, Medicinal/ or exp tea/ or exp Caffeine/ or exp Menthol/ or exp Phenol/ or exp Polyphenols/ or exp Curcumin/ or (herbal or 'phyto nutrient*' or phytonutrient* or 'phyto chemical*' or phytochemical* or 'phyto constituent*' or phytoconstituent* or nutraceutical or 'bioactive ingredient*' or 'bioactive compound*').ti,ab. or (dietary adj1 (constituent* or supplement*)).ti,ab. or (tea* or coffee* or caffein* or coffein* or mate).ti,ab. or ('caralluma fimbriata' or 'hoodia gordonii' or 'garcinia cambogia' or succulent* or 'citrus aurantium' or 'catha edulis' or khat or 'coleus forskohlii' or forskolin or saffron* or umeboshi or flaxseed* or 'linum usitatissimum' or ginger or 'zingiber* officinale' or almond* or aloe or pineapple* or psyllium or 'plantago ovata' or 'capsicum annum' or pepper* or 'harpagophytyum procumbens' or ginseng* or 'camellia sinensis' or 'coix lacryma-jobi' or 'gymnema sylvestre' or 'cyamopsis tetragonolobus' or 'punica granatum' or 'amorphophallus konjac' or 'benincasa hispida' or 'mitragyna speciosa' or 'cissus quadrangularis' or 'ephedra sinica' or 'robinia pseudoacacia' or 'evodiae fructus' or 'eucommia' or 'ilex paraguariensis' or plant* or extract* or mint or menthol* or phenol* or polyphenol* or stilbene* or curcumin* or coumarin or flav* or isoflavon* or lignan* or terpen* or carotenoid* or capsaicin* or piperine* or theophylline* or theobromine* or 'hydroxycitric acid*' or organosulfur* or phytosterol* or alkaloid* or chalcone* or sesquiterpene* or xanthine* or alkylamide* or anthocyanin*).ti,ab. | 2325576 |
| 1 and 2 and 3                                                                              |         |
| limit 4 to (english or german)                                                             |         |
| 6 5 not (animals not humans).sh.                                                           | 1062    |
### Table S2: Baseline characteristics

| Study                          | Year | Type of study | Plant extract(s) of | Primary outcome scale | Participant, n | Age, years (SD) | Female, % | BMI, kg/m² (SD) | WHR | Follow-up, days | Follow-up, minutes |
|-------------------------------|------|---------------|---------------------|-----------------------|----------------|----------------|-----------|----------------|-----|-----------------|-------------------|
| Auvichayapat et al. [48]      | 2008 | RCT           | Camellia sinensis (green tea) | VAS                   | 60             | 48.7 (5.2)     | 70        | 27.7 (3.4)     | 0.86| 84              | n.a.              |
| Boix-Castejon et al. [71]     | 2018 | RCT           | Hibiscus sabdariffa + Aloysia citriodora | VAS                   | 54             | 51.0 (n.r.)    | 100       | 29.7 (3.8)     | 0.90| 60              | n.a.              |
| Diepvens et al. [49]          | 2005 | RCT           | Camellia sinensis (green tea) | VAS                   | 46             | 41.7 (9.3)     | 100       | 27.7 (1.8)     | 0.80| 87              | 180               |
| Dostal et al. [50]            | 2017 | RCT           | Camellia sinensis (green tea) | VAS                   | 64             | 60.9 (n.r.)    | 100       | 28.3 (n.r.)     | 0.86| 365             | 240               |
| Gonzalez et al. [68]          | 2018 | RCT           | Crocus sativus + Citrus paradisi | VAS                   | 20             | 25.5 (3.8)     | n.r.      | 29.9 (5.1)     | 0.89| 28              | n.a.              |
| Gout et al. [67]              | 2010 | RCT           | Crocus sativus | % of participants | 61             | 36.1 (0.7)     | 100       | 26.8 (0.2)     | 0.85| 56              | n.a.              |
| Kazemipoor et al. [15]        | 2016 | RCT           | Carum carvi | VAS                   | 70             | 36.1 (0.7)     | 100       | n.r.           | 0.90| 90              | n.a.              |
| Kudiganti et al. [74]         | 2016 | RCT           | Sphaeranthus indicus + Garcinia mangostana | VAS                   | 60             | 38.0 (1.7)     | 63.2      | 28.3 (0.2)     | 0.95| 112             | n.a.              |
| Kurriyan et al. [66]          | 2007 | RCT           | Caralluma adscendens var. fimbriata | VAS                   | 62             | 38.8 (7.0)     | 78        | 30.2 (4.8)     | 0.90| 60              | n.a.              |
| Lejeune et al. [59]           | 2003 | RCT           | Capsicum annuum | VAS                   | 120            | n.r.           | 74.7      | 27.0 (8.0)     | 0.85| 91              | n.a.              |
| Mangine et al. [55]           | 2012 | RCT           | Camellia sinensis (green tea) | HSS                   | 50             | 33.5 (13.2)    | 71.9      | 33.3 (6.5)     | n.r.| 56              | n.a.              |
| Rondanelli et al. [64]        | 2013 | RCT           | Camellia sinensis (green tea) + Capsicum annuum + Piper nigrum + Fucus vesiculosus + Allium sativa | Haber                 | 37             | 43.7 (9.2)     | 73        | 30.3 (3.0)     | 0.90| 56              | n.a.              |
| Rondanelli et al. [72]        | 2011 | RCT           | Phaseolus vulgaris + Cynara scolymus | Haber                 | 40             | 49.8 (8.0)     | 61.5      | 31.3 (2.5)     | n.r.| 60              | n.a.              |
| Rondanelli et al. [56]        | 2009 | RCT           | Camellia sinensis (green tea) | Haber                 | 138            | 39.3 (10.4)    | 91.4      | n.r.           | n.r.| 56              | n.a.              |
| Roshan et al. [63]            | 2018 | RCT           | Coffea sp. | SNAQ                   | 50             | 52.3 (9.3)     | 76.7      | n.r.           | n.r.| 64              | n.a.              |
| Urbina et al. [58]            | 2017 | RCT           | Capsicum annuum | CNAQ                   | 111            | 30.0 (1.0)     | 59.7      | 27.5 (0.6)     | 0.86| 84              | n.a.              |
| Westerterp-Plantenga et al. [54] | 2005 | RCT           | Camellia sinensis (green tea) | VAS                   | 76             | n.r.           | n.r.      | 27.5 (2.7)     | n.r.| 91              | n.a.              |
| Alkhatib et al. [65]          | 2015 | Co-RCT        | Camellia sinensis (green tea) + Ilex paraguariensis (Yerba Maté) + Paullinia cupana + Coffea sp. + Serenoa repens + Polygonum multiflorum | Hunger scale | 12             | 24 (3.8)      | 41.7      | 22.5 (3.9)     | n.r.| n.a.           | 120               |
### Supplementary Materials

| Study                                      | Year | Type of study | Plant extract(s) of 2 | Primary outcome scale | Participant, n | Age, years (SD) | Female, % | BMI, kg/m² (SD) | WHR | Follow-up, days 3 | Follow-up, minutes 3 |
|--------------------------------------------|------|---------------|-----------------------|-----------------------|----------------|-----------------|-----------|-----------------|-----|------------------|---------------------|
| Alkhad et al. [28]                         | 2017 | Co-RCT        | *Eleutherococcus senticosus* + *Capsicum annuum* + Pausinystalia yohimbe | VAS                   | 21             | 30.8 (7.3)      | 100       | 22.0 (1.1)      |     | n.r.              | n.a.                 |
| Fernandes et al. [51]                      | 2018 | Co-RCT        | *Ilex paraguariensis* (Yerba Maté) | VAS                   | 23             | 24.4 (0.6)      | 95.7      | 21.1 (0.4)      | 0.74 | n.r.              | n.a.                 |
| Greenberg et al. [75]                      | 2016 | Co-RCT        | *Camellia sinensis* (green tea) | VAS                   | 30             | 22.7 (3.9)      | 0         | 23.3 (2.4)      | 0.81 | n.a.              | 150                 |
| Greenberg et al. [60]                      | 2012 | Co-RCT        | *Theobroma cacao*     | VAS                   | 11             | 23.5 (5.7)      | 0         | 23.6 (4.2)      | n.r. | n.a.              | 180                 |
| Hao et al. [73]                            | 2017 | Co-RCT        | *Salacia chinensis*   | VAS                   | 54             | 32.0 (12.0)     | 58.3      | 28.8 (3.6)      |     | n.r.              | n.a.                 |
| Hochkogler et al. [57]                     | 2014 | Co-RCT        | *Capsicum annuum*     | VAS                   | 15             | 25 (20-39)      | 0         | 27.5 (1.5)      | n.r. | n.a.              | 120                 |
| Hochkogler et al. [69]                     | 2017 | Co-RCT        | *Eriodictyon californicum* | VAS                   | 24             | 25.9 (4.5)      | 64.7      | 21.6 (2.3)      | n.r. | n.a.              | 120                 |
| Janssens et al. [21]                       | 2014 | Co-RCT        | *Capsicum frutescens* + *Capsicum annuum* | VAS                   | 19             | 29.7 (10.8)     | 46.7      | 23.3 (2.9)      | 0.75 | n.r.              | 2160                |
| Josic et al. [52]                          | 2010 | Co-RCT        | *Camellia sinensis* (green tea) | VAS, Haber            | 15             | 27.0 (3.0)      | 50.0      | 22.3 (3.4)      | n.r. | n.a.              | 120                 |
| Mennella et al. [70]                       | 2016 | Co-RCT        | *Gentiana lutea*      | VAS                   | 20             | 25.3 (3.1)      | 45.0      | 22.1 (2.3)      | n.r. | n.a.              | 180                 |
| Paneck-Shirley et al. [61]                 | 2018 | Co-RCT        | *Coffea sp.*          | Likert Scale          | 53             | 25.2 (1.5)      | 58.0      | 24.5 (2.7)      | 0.8  | (0.1)            | n.a.                 |
| Reinbach et al. [53]                       | 2009 | Co-RCT        | *I1: Capsicum annuum* (cayenne)  
*I2: Camellia sinensis* (green tea)  
*I3: Capsicum annuum* (CH-19 sweet pepper)  
*I4: Capsicum annuum* (cayenne) + *Camellia sinensis* (green tea) | VAS                   | 27             | 26.9 (6.3)      | 62.9      | 22.2 (2.7)      | n.r. | 21               | n.a.                 |
| Schubert et al. [62]                       | 2014 | Co-RCT        | *Coffea sp.*          | VAS                   | 18             | 26.3 (6.3)      | 75.0      | 22.7 (2.2)      | n.r. | n.a.              | 270                 |
| Shin et al. [76]                           | 2015 | Co-RCT        | *Vitis vinifera*      | VAS                   | 20             | 26.4 (1.7)      | 0         | 23.1 (0.7)      | n.r. | n.a.              | 330                 |

1 CNAQ, Council on Nutrition Appetite Questionnaire; Co-RCT, crossover randomized controlled trial; HSS, Hunger and Satiety Scale; LMS, labelled magnitude satiety scale; n.a., not applicable; n.r., not reported, RCT, randomized controlled trial; SNAQ, Simplified Nutritional Appetite Questionnaire; VAS, visual analogue scale; WHR, waist/hip-ratio. 2 For accepted scientific name and exact composition see Table S4. 3 Three different ways of reporting: measurements over several days: there is a value for follow-up days, but no value for follow-up minutes; measurements over several minutes on just one day: there is a value for follow-up minutes, but no value for follow-up days; measurements over several days and over several minutes on each of these days: there are values for both follow-up days and follow-up minutes.
### Supplementary Materials

Table S3: Study characteristics

| Study                | Year | Type of study | Study location                          | Number of sites | Inclusion criteria                                                                 | Exclusion criteria                                                                 | Outwashing, days |
|---------------------|------|---------------|-----------------------------------------|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|
| Auvichayapat et al. [48] | 2008 | RCT          | Faculty of Medicine of Khon Kaen University, Thailand | 1               | 1) Males, aged 40 to 60 years  
2) Females, postmenopausal > 1 year  
3) BMI > 25 kg/m² | 1) Metabolic disease, such as diabetes mellitus, hyper- or hypo thyroidism, and Cushing syndrome  
2) Systemic disease, such as heart-, renal-, or liver disease  
3) Use of prescribed medications, such as antipsychotics, antidepressants, antiobesity medications, or hormonal therapy  
4) Regular exercise or an average total energy expenditure > 8373.6 kJ/day  
5) History of tea or caffeine hypersensitivity | n.a. |
| Boix-Castejon et al. [71] | 2018 | RCT          | Alicante, Spain                         | n.r.            | 1) Females  
2) BMI 25 to 34.9 kg/m² | 1) Any obesity-related pathology  
2) Use of prescribed medication for hypercholesterolemia or hypertension  
3) Consumption of antioxidant supplements/drugs  
4) Frequent alcohol consumption  
5) Pregnant/lactating | n.a. |
| Diepvens et al. [49] | 2005 | RCT          | n.r.                                   | n.r.            | 1) Age 19 to 57 years  
2) BMI 25 to 31 kg/m²  
3) Moderate caffeine-users (200 - 400 mg caffeine/d)  
4) Good health  
5) Non-smokers  
6) Normotensive  
7) No use of medication  
8) At most moderate alcohol users | n.r. | n.a. |
| Dostal et al. [50] | 2017 | RCT          | University of Minnesota’s Delaware Clinical Research Unit, USA | 1               | 1) Healthy  
2) Nonsmoking  
3) Post-menopausal women  
4) Age 50 to 70 years  
5) Classified as having 'heterogeneously dense’ or 'extremely dense' breast tissue after a routine screening mammogram  
6) BMI > 25kg/m² | n.r. | n.a. |
| Gonzalez et al. [68] | 2018 | RCT          | Hofstra University, NY, USA            | 1               | 1) Age 18 to 59 years  
2) BMI > 25 kg/m²  
3) Consuming at least two large meals per day | 1) Use of other medication (e.g., ADHD medication, antidepressants, antibiotics, etc.) | n.a. |
**Supplementary Materials**

| Study                      | Year | Type of study | Study location                                                                 | Number of sites | Inclusion criteria                                                                 | Exclusion criteria                                                                 | Outwashing, days |
|----------------------------|------|---------------|--------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|
| Gout et al. [67]           | 2010 | RCT           | GSR Investigation Center, Toulouse, France                                     | 1               | 1) Healthy women 2) Age 25 to 45 years 3) BMI 25 kg/m² to 28 kg/m²                  | 2) Use of nutritional supplements (including multivitamins)                        | n.a.            |
| Kazemipoor et al. [15]     | 2016 | RCT           | n.r.                                                                          | n.r.            | 1) Habitually performing aerobics during the whole period of the intervention       | n.r.                                                                                | n.a.            |
| Kudiganti et al. [74]      | 2016 | RCT           | Srinivasa Clinic & Diabetic Care Centre, Southern India                      | 1               | 1) Healthy overweight adult men and women 2) Age 21 to 50 years 3) Willing to adhere to a vegetarian or non-vegetarian diet 4) Willing to walk for 5 days per week 5) BMI 27 to 32 kg/m² | 1) Intractable obesity 2) History of chronic diseases, or personal behaviors that would confound the interpretation of results arising from this study | n.a.            |
| Kuriyan et al. [66]        | 2007 | RCT           | Nutrition Clinic of St. John’s Medical College Hospital, Bangalore, India     | 1               | 1) Age 25 to 60 years 2) BMI > 25 kg/m²                                               | 1) Presence of any chronic disease 2) Use of any medication for weight loss         | n.a.            |
| Lejeune et al. [59]        | 2003 | RCT           | n.r.                                                                          | n.r.            | 1) Age 18 to 60 years 2) BMI 25 to 35 kg/m² 3) Good health 4) Nonsmoking 5) No use of medication 6) At most moderate alcohol user | n.r.                                                                                | n.a.            |
| Mangine et al. [55]        | 2012 | RCT           | n.r.                                                                          | n.r.            | 1) Age 18 to 59 years 2) BMI 25 to 40 kg/m² 3) Daily energy intake to be at, or above their calculated dietary fuel requirement | n.r.                                                                                | n.a.            |
| Rondanelli et al. [64]     | 2013 | RCT           | 2) Endocrinology and Clinical Nutrition Unit of Azienda di Servizi alla Persona di Pavia, University of Pavia, Italy | 2               | 1) Healthy men and women 2) Age 25 to 45 years 3) BMI 25 to 35 kg/m²                | 1) Any hepatic or renal disease 2) Diabetes, unstable cardiovascular disease or uncontrolled hypertension 3) Eating disorder (diagnosed bulimia) 4) Active cancer | n.a.            |
### Supplementary Materials

| Study | Year | Type of study | Study location | Number of sites | Inclusion criteria | Exclusion criteria | Outwashing, days |
|-------|------|---------------|----------------|-----------------|--------------------|-------------------|-----------------|
| Rondanelli et al. [72] | 2011 | RCT | Outpatient Dietetic and Metabolic Unit, University of Pavia, Italy | 1 | 1) Age 18 to 50 years 2) BMI 25 to 35 kg/m² 3) Females were required to be premenopausal, not currently pregnant and normally menstruating | 5) Undergone surgery for weight loss 6) Major depressive disorder 7) Use of medications for weight loss 8) Pregnant or lactating 9) Entered menopause | n.a. |
| Rondanelli et al. [56] | 2009 | RCT | Outpatient Unit for the Treatment of Obesity, Fondazione IRCCS Policlinico San Matteo, University of Pavia, Italy | 1 | 1) Age 18 to 50 years 2) Not pregnant and normally menstruating 3) BMI 25 to 35 kg/m² 4) No significant alterations in lipid and carbohydrate metabolism (glucose 6.11 mmol/L, total cholesterol 6.20 mmol/L, TAG 2.28 mmol/L) 5) Any acute or disabling conditions 6) Any endocrinological-, neoplastic- and autoimmune diseases 7) No history, signs or symptoms of heart disease (mild hypertension with systolic pressure 140 – 150 mmHg and diastolic pressure 80 – 95 mmHg was allowed) | 1) Major depressive disorder 2) History or current diagnosis of bulimia, panic disorder, obsessive-compulsive disorder, post-traumatic stress disorder, bipolar I or II disorder or schizophrenia 3) Use of psychoactive drugs, including anti-obesity agents | n.a. |
| Roshan et al. [63] | 2018 | RCT | Imam Hossein Hospital diabetes clinic, Tehran, Iran | 1 | 1) Age 18 to 70 years 2) BMI > 25 kg/m² 3) Metabolic syndrome (according to the new International Diabetes Federation definition: central obesity (waist circumference > 102 cm in men or > 88 cm in women) in conjunction with two of the following risk factors: fasting blood glucose) | 1) Insulin administration for controlling blood glucose 2) Hypo- or hyperthyroidism 3) Renal failure 4) Routine coffee consumption 5) Pregnancy or breast-feeding | n.a. |
## Supplementary Materials

| Study                     | Year | Type of study | Study location | Number of sites | Inclusion criteria                                                                 | Exclusion criteria                                                                 | Outwashing, days |
|---------------------------|------|---------------|----------------|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------|
| Urbina et al. [58]        | 2017 | RCT           | n.r.           | n.r.            | 1) Age 18 to 56 years<br>2) Apparently healthy and free from disease<br>3) No use of any ergogenic supplements in the last 6 months<br>4) Able to do everything required in the study<br>5) Agree to not do strenuous activity 24 to 48 hours before appointment<br>6) Agree to not smoke or use caffeine and tobacco for 12 hours before appointment<br>7) Agree to not eat or drink anything for 12 hours before appointment<br>8) Agree to not drink alcohol 24 hours before appointment<br>9) BMI 24.5 to 29.5 kg/m² | 6) Use of corticosteroids, hormone replacement therapy as oestrogen or progesterone or weight loss supplements<br>7) Following unusual weight loss plans<br>8) Cancer<br>9) Experiencing cerebrovascular accident and other cognitive problems or chronic diseases that impaired their compliance<br>10) Alteration of the medication controlling blood glucose, blood pressure or lipid profile<br>11) Not consumed over 10 % of the supplements | n.r.  n.a. |
| Westerterp-Plantenga et al. [54] | 2005 | RCT           | n.r.           | n.r.            | 1) Age 18 to 60 years<br>2) BMI 25 to 35 kg/m²<br>3) Good health<br>4) Nonsmoker<br>5) No use of medication<br>6) At most a moderate alcohol user | n.r.  n.a. |
| Alkhatib et al. [65]      | 2015 | Co-RCT        | n.r.           | n.r.            | 1) Free from illness and any type of orthopedic limitation or injury<br>2) Use of medications (except contraceptive pills), including those for autoimmune disease, cancer, peptic ulcers or anemia | 1) History of any cardiovascular- or respiratory disease, hypertension, liver- or kidney disease, musculoskeletal- or neuromuscular- or neurological disease, autoimmune disease, cancer, peptic ulcers or anemia | 3                |
## Supplementary Materials

| Study                  | Year | Type of study | Study location | Number of sites | Inclusion criteria                                                                                                                                                                                                 | Exclusion criteria                                                                                                                                                                                                 | Outwashing, days |
|------------------------|------|---------------|----------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Alkhatib et al. [28]   | 2017 | Co-RCT        | n.r.           | n.r.           | 1) Female 2) Age 18 to 40 years 3) Habitually complete 150 minutes of moderate physical activity per week 4) BMI < 30kg/m²                                                                                              | heart, pulmonary, thyroid, anti-hyperlipidemic, hypoglycemic, anti-hypertensive, endocrinologic, psychotropic, neuromuscular, neurological, or androgenic conditions 3) Family history of heart problems, high blood pressure, and/or stroke 4) Pregnant or breastfeeding 1) Consuming any ergogenic aid or above habitual caffeine consumption rate (200 mg/d) for at least 6 weeks prior to the study, based on all types of caffeinated beverages (coffee, energy drinks, soft drinks, caffeine supplements or medications) | 3                |
| Fernandes et al. [51]  | 2018 | Co-RCT        | n.r.           | n.r.           | 1) Healthy 2) Female 3) Stable weight in the last 12 months (weight gain or loss less than 5 %) 4) BMI < 30kg/m²                                                                                                       | 1) History of any cardiovascular- or respiratory disease, hypertension, liver- or kidney disease, musculoskeletal- or neuromuscular- or neurological disease, autoimmune disease, cancer, peptic ulcers or anemia 2) Use of medications, including those for heart, pulmonary, thyroid, anti-hyperlipidemic, hypoglycemic, anti-hypertensive, endocrinologic, psychotropic, neuromuscular, neurological, or androgenic conditions 3) Family history of heart problems, high blood pressure, and/or stroke 4) Pregnant or breastfeeding 5) Consuming any ergogenic aid or above habitual caffeine consumption rate (200 mg/d) for at least 6 weeks prior to the study, based on all types of caffeinated beverages (coffee, energy drinks, soft drinks, caffeine supplements, or medications) | 7                |
| Study           | Year | Type of study | Study location                                      | Number of sites | Inclusion criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Exclusion criteria                                                                                                                                                                                                                                                                                                                                 | Outwasing, days |
|----------------|------|---------------|----------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Greenberg et al. [75] | 2016 | Co-RCT        | Brooklyn College, City University of New York, USA | 1               | 1) Nonsmokers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5) Diabetes, thyroid dysfunction, chronic kidney disease or liver disease 6) Undergone bariatric surgery 7) Chronic alcoholics or smokers 8) Use of hormonal medications (e.g., contraceptives) or appetite/body weight-management drugs (e.g., appetite suppressants) in the last 12 months 9) Use of pump inhibitor medications 10) Participated in any food restriction program 11) Use of nutritional supplements during the past 12 months 12) Lactose or fructose intolerant | > 7             |
| Greenberg et al. [60] | 2012 | Co-RCT        | n.r.                                               | n.r.            | 1) Healthy 2) Male 3) Nonsmoker 4) No use of medications that could influence body weight or interfere with glucose metabolism                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1) Being regular, frequent drinkers of coffee, tea, or sodas that contained caffeine (> 1 serving/d) 2) Participating in regular, frequent vigorous physical activity 3) Use of medication that could affect appetite 4) Being allergic to chocolate, cocoa, or pizza 5) Attempting to gain or lose weight 6) Interested in registering for courses taught by the principal investigator 7) Women (to avoid possible effects of menstrual hormones on appetite) | 7 to 14          |
| Hao et al. [73]    | 2017 | Co-RCT        | Department of Nutritional Sciences, Rutgers University, New Jersey, USA | 1               | 1) Healthy 2) BMI 25 to 35 kg/m²                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1) Eating disorder 2) Gastrointestinal illness or bariatric surgery 3) Hyperparathyroidism or untreated thyroid disease 4) Diabetes 5) Blood pressure > 140/90 mmHg                                                                 | 30              |
## Supplementary Materials

| Study                  | Year | Type of study | Study location                          | Number of sites | Inclusion criteria                                                                                                                                  | Exclusion criteria                                                                 |
|-----------------------|------|---------------|-----------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Hochkogler et al. [57] | 2014 | Co-RCT        | University of Vienna, Vienna, Austria   | 1               | 1) Age 20 to 40 years  
  2) BMI 25 to 32 kg/m²  
  3) Nonsmoking  
  4) No abnormal eating behavior  
  5) No alcohol abuse  
  6) No medication  
  7) Metabolically healthy  
  8) Sensorially untrained  
  9) Fasting blood glucose < 120 mg/dL | 6) Significant immune, hepatic, or renal disease  
  7) Significant cardiac disease  
  8) Active malignancy or cancer therapy within the past year  
  9) Use of obesity medications or dietary supplements or any weight regimen |
| Hochkogler et al. [69] | 2017 | Co-RCT        | University of Vienna, Vienna, Austria   | 1               | 1) Age 20 to 45 years  
  2) BMI 18.5 to 25 kg/m²  
  3) Nonsmoking  
  4) No alcohol or drug abuse  
  5) Metabolically healthy  
  6) Sensorially untrained  
  7) Age 18 to 50 years  
  8) BMI 20 to 30 kg/m²  
  9) Good health  
  10) Nonsmoking | 1) Women (due to their menstrual cycle as estrogen has been shown to interfere with serotonin concentrations) |
| Janssens et al. [21]   | 2014 | Co-RCT        | Metabolic unit of Maastricht University, department of Human Biology, Netherlands | 1               | 1) Healthy  
  2) Normal weight  
  11) No use of dietary supplement and medication except for oral contraceptives  
  12) Not more than moderate amount of alcohol (less than 10 g alcohol per drink, less than 10 drinks per week) or caffeine-containing beverages (less than 2 cups per day)  
  13) Weight stable (weight change < 3 kg during the last 6 months) and dietary unrestrained  
  14) Lightly or moderately active (1 to 5 hours moderate exercise per week)  
  15) Used to spicy foods on a regular basis (1 to 2 days per week, in a low dosage with one meal/day) | 1) Pregnant or lactating women  
  2) Allergies for the food items used in the study |
| Josic et al. [52]      | 2010 | Co-RCT        | Clinical research department, Skåne     | 1               | 1) Healthy  
  2) Normal weight | n.r. |

| Outwashing, days | Hochkogler et al. [57] | 2014 | Co-RCT | University of Vienna, Vienna, Austria | 1 | 1) Age 20 to 40 years  
  2) BMI 25 to 32 kg/m²  
  3) Nonsmoking  
  4) No abnormal eating behavior  
  5) No alcohol abuse  
  6) No medication  
  7) Metabolically healthy  
  8) Sensorially untrained  
  9) Fasting blood glucose < 120 mg/dL | 6) Significant immune, hepatic, or renal disease  
  7) Significant cardiac disease  
  8) Active malignancy or cancer therapy within the past year  
  9) Use of obesity medications or dietary supplements or any weight regimen |
| Hochkogler et al. [69] | 2017 | Co-RCT | University of Vienna, Vienna, Austria | 1 | 1) Age 20 to 45 years  
  2) BMI 18.5 to 25 kg/m²  
  3) Nonsmoking  
  4) No alcohol or drug abuse  
  5) Metabolically healthy  
  6) Sensorially untrained | n.r. |
| Janssens et al. [21]   | 2014 | Co-RCT | Metabolic unit of Maastricht University, department of Human Biology, Netherlands | 1 | 1) Healthy  
  2) Normal weight  
  11) No use of dietary supplement and medication except for oral contraceptives  
  12) Not more than moderate amount of alcohol (less than 10 g alcohol per drink, less than 10 drinks per week) or caffeine-containing beverages (less than 2 cups per day)  
  13) Weight stable (weight change < 3 kg during the last 6 months) and dietary unrestrained  
  14) Lightly or moderately active (1 to 5 hours moderate exercise per week)  
  15) Used to spicy foods on a regular basis (1 to 2 days per week, in a low dosage with one meal/day) | 1) Pregnant or lactating women  
  2) Allergies for the food items used in the study |
| Josic et al. [52]      | 2010 | Co-RCT | Clinical research department, Skåne | 1 | 1) Healthy  
  2) Normal weight | n.r. |
| Study                     | Year | Type of study | Study location                                                                 | Number of sites | Inclusion criteria                                                                                                                                                                                                 | Exclusion criteria                                                                                                                                                                                                 | Outwashing, days |
|--------------------------|------|---------------|---------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Mennella et al. [70]     | 2016 | Co-RCT        | Department of Agricultural Sciences of Naples, USA                               | 1               |                                                                                             | 1) BMI ≥ 25 kg/m² 2) Any chronic illnesses such as diabetes or hypertension 3) Smokers 4) Use of prescription medication 5) Under a controlled dietary regimen 6) Lost weight over the previous 3 months 7) Pregnant or lactating | 7                |
| Panek-Shirley et al. [61]| 2018 | Co-RCT        | University at Buffalo, Department of Exercise and Nutrition Sciences, Nutrition and Health Research Laboratory, USA | 1               | 1) Age 18 to 50 years                                                                                                                                | 1) No previous experience or a previous adverse event with caffeine 2) Use of any medication 3) Medical condition contraindicating caffeine or stimulant consumption 4) Medical condition affecting appetite or eating 5) Use of tobacco products within the past 6 months | 7                |
| Reinbach et al. [53]     | 2009 | Co-RCT        | Maastricht University Hospital, Netherlands                                      | 1               |                                                                                             |                                                                                                    | 7                |
| Schubert et al. [62]     | 2014 | Co-RCT        | Helsinki, Sweden                                                                | n.r.            | 1) Non-smoking 2) Pre-menopausal women 3) BMI < 30 kg/m² 4) Age 18 to 45 years 5) No use of any medicine known to influence lipid, carbohydrate, or caffeine metabolism 6) Not dieting and no extreme dietary behaviours (Three Factor Eating Questionnaire) 7) Weight stable in the previous 3 months (± 5 % by self-report) 8) No history of any cardiovascular- or metabolic diseases 9) No food allergies or intolerances 10) No history of gastrointestinal disorders | 1) Atypical or abnormal eating patterns which could have potentially confounded the study outcomes                                                                                                          | 3 to 4           |
| Shin et al. [76]         | 2015 | Co-RCT        | Human Nutrition Unit, University of Auckland, New Zealand                      | 1               | 1) Healthy men 2) BMI 18 to 28kg/m² 3) Age 18 to 60 years 4) Nonsmokers                                                                          | 1) Active diet program or loss/gain of > 5 kg within the last 6 months 2) Hypersensitivities or allergies to any foods or ingredients included in the study                                                                 | 3                |
**Supplementary Materials**

| Study | Year | Type of study | Study location | Number of sites | Inclusion criteria | Exclusion criteria | Outwashing, days |
|-------|------|---------------|----------------|----------------|--------------------|--------------------|-----------------|
|       |      |               |                |                | 5) No history of cardiovascular disease, diabetes, or any other significant metabolic, endocrine or gastrointestinal disease | 3) Dislike and/or unwillingness to consume items listed as study foods (breakfast and lunch meals) |                |
|       |      |               |                |                | 6) No use of any medications that may have had any effect on appetite or weight regulation throughout the trial period | 4) Unwilling/unable to comply with study protocol |                |
|       |      |               |                |                | 4) Unwilling/unable to comply with study protocol | 5) Current participation in another clinical intervention trial |                |

1 Co-RCT, crossover randomized controlled trial; n.a., not applicable; n.r., not reported; oGTT, oral glucose tolerance test; RCT, randomized controlled trial; TFEQ, Three Factor Eating Questionnaire.
**Supplementary Materials**

| Author                  | Year | Type of study | Commercial product name | Plant of origin | Bioactive phytochemical(s) | Additional compounds/excipients | Placebo                        | Form     |
|-------------------------|------|---------------|--------------------------|-----------------|----------------------------|---------------------------------|--------------------------------|----------|
| Auvichayapat et al. [48] | 2008 | RCT           | n.r.                     | Camellia sinensis L. Kuntze (green tea) | 250 mg green tea leaf extracts, thereof: 4.09 mg catechin, 33.58 mg EGC, 9.28 mg ECG, 28.86 mg caffeine, 0.24 mg gallic acid | n.r.                          | Cellulose                      | Capsule  |
| Boix-Castejon et al. [71]| 2018 | RCT           | MetabolAid®              | Hibiscus sabdariffa L. (65 %) + Aloysia citriodora Palau (syn. Lippia citriodora) (35 %) | 500 mg polyphenolic extracts, thereof: 3.5 % anthocyanins, 15 % verbascoside | n.r.                          | Crystalline microcellulose      | Capsule  |
| Diepvens et al. [49]     | 2005 | RCT           | Sunphenon® 100S          | Camellia sinensis L. Kuntze (green tea) | 310 mg green tea extracts, thereof: 134.1 mg total catechins, 14.0 mg EC, 26.7 mg EGC, 23.6 mg ECG, 66.2 mg EGCG, 26.3 mg caffeine | 74.9 mg maltodextrin, 71.7 mg microcrystalline cellulose, 1.5 mg silicium dioxide, 1.5 mg magnesium stearate | 310 mg maltodextrin             | Capsule  |
| Dostal et al. [50]       | 2017 | RCT           | n.r.                     | Camellia sinensis L. Kuntze (green tea) | Decaffeinated green tea extracts, thereof: 328.75 mg catechins (210.75 mg as EGC) | n.r.                          | 816 mg maltodextrin, 808 mg cellulose, 8 mg magnesium stearate | Capsule  |
| Gonzalez et al. [68]     | 2018 | RCT           | CraveFix 96              | Crocus sativus L. | 89 mg unsp. saffron stigma extracts 50 mg naringin | 1000 IU Vitamin D3               | Rice flour                     | Capsule  |
| Gout et al. [67]         | 2010 | RCT           | Satiereal®               | Crocus sativus L. | 88.25 mg unsp. saffron stigma extracts | Maltodextrin, magnesium stearate, hydrated silica | 88.25 mg microcrystalline cellulose, maltodextrin magnesium stearate, hydrated silica | Capsule  |
| Kazemipoor et al. [15]   | 2016 | RCT           | n.r.                     | Carum carvi L. | 30 ml unsp. caraway aqueous extracts | n.r.                          | 30 ml caraway essence (1 % g/L) | Beverage (30 ml water) |
| Kudiganti et al. [74]    | 2016 | RCT           | Meratrim®                | Sphaeranthus indicus L. Garcinia mangostana L. | 300 mg unsp. extracts 100 mg unsp. extracts | Microcrystalline cellulose, magnesium stearate | Microcrystalline cellulose, magnesium stearate | Capsule  |
| Kuriyan et al. [66]      | 2007 | RCT           | n.r.                     | Caralluma adscendens var. | 500 mg unsp. extracts | n.r.                          | 500 mg maltodextrin             | Capsule  |
### Supplementary Materials

| Author                                      | Year | Type of study | Commercial product name | Plant of origin | Bioactive phytochemical(s) | Additional compounds/ excipients | Placebo | Form  |
|---------------------------------------------|------|---------------|--------------------------|-----------------|-----------------------------|----------------------------------|---------|-------|
| Lejeune et al. [59]                         | 2003 | RCT           | Capsicum annuum L.       | Plant of origin | Bioactive phytochemical(s)  | Additional compounds/ excipients | Placebo | Form  |
| Mangine et al. [55]                         | 2012 | RCT           | PhosphoLean™             | Camellia sinensis L. | 35 mg EGCG                 | 40 mg NOPE, 25 mg mixed phospholipids | 100 mg rice flour | Capsule |
| Rondanelli et al. [64]                      | 2013 | RCT           | n.r.                     | Camellia sinensis L. | 150 mg decaffeinated unsp. extracts | 7.5 mg oleoresin                  | 150 mg L-Carnitine, 2.5 mg mint essential oil | n.r. | Capsule |
| Rondanelli et al. [72]                      | 2011 | RCT           | BONVIT®                  | Phaseolus vulgaris L. | 100 mg stand. extracts | n.r.                            | n.r. | Tablets |
| Rondanelli et al. [56]                      | 2009 | RCT           | PhosphoLEAN™             | Camellia sinensis L. | 50 mg EGCG                 | 85 mg NOPE                        | n.r. | Capsule |
| Roshan et al. [63]                          | 2018 | RCT           | n.r.                     | Coffea sp.       | 400 mg decaffeinated green coffee bean extracts, thereof: 186 mg chlorogenic acids | n.r. | Starch | Capsule |
| Urbina et al. [58]                          | 2017 | RCT           | Capsimax®                | Capsicum annuum L. | 11: 2 mg capsaicinoids I2: 4 mg capsaicinoids | n.r. | Corn starch | Pill |
| Westerterp-Plantenga et al. [54]            | 2005 | RCT           | n.r.                     | Camellia sinensis L. | 45 mg EGCG, 25 mg caffeine | 380 mg vegetable oil            | 450 ml vegetable oil | Capsule |
| Alkhatib et al. [65]                        | 2015 | Co-RCT        | Shred-Matrix®            | Camellia sinensis L. Kuntze (green tea) Ilex paraguariensis A. St.-Hil. (Yerba Maté) Paullinia cupana Kunth Coffea sp. Serenoa repens (W. Bartram) Small | 70 mg unsp. green tea leaf extracts | Yerba Maté | n.r. | Maltodextrin, hemp protein powder | Capsule |
## Supplementary Materials

| Author                  | Year | Type of study | Commercial product name | Plant of origin | Bioactive phytochemical(s) | Additional compounds/exipients | Placebo | Form       |
|-------------------------|------|---------------|-------------------------|-----------------|---------------------------|--------------------------------|---------|------------|
| Alkhatib et al. [28]    | 2017 | Co-RCT        | *Ilex paraguariensis*   | *Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim. | 500 mg unsp. Yerba Maté green leaves extracts | n.r. | Empty capsule | Capsule |
|                         |      |               |                         | *Capsicum annuum* L. |                           |                                 |         |            |
|                         |      |               |                         | *Pausinystalia yohimbe* Pierre ex Beille |               |                                 |         |            |
|                         |      |               |                         |                  |                           |                                 |         |            |
| Fernandes et al. [51]   | 2018 | Co-RCT        | Teavigo® *Camellia sinensis* L. Kuntze (green tea) | 376 mg EGCG | n.r. | 400 mg corn starch | Capsule (with 295 ml liquid test meal) |
| Greenberg et al. [60]   | 2012 | Co-RCT        | *Coffea sp.* |                           | 6 mg per kg body weight | I2: 6 mg per kg body weight | I3: 0 mg per kg body weight | n.r. | Water (I1: Water, I2: Caffeinated coffee, I3: Decaffeinated coffee) |
| Greenberg et al. [75]   | 2016 | Co-RCT        | *Theobroma cacao* L. | 0.6 mg EC, 0.2 mg catechin, 2.9 mg procyanidins | I1: Nonalkalized cocoa mixture, thereof per kg body weight | I2: 6 mg per kg body weight | I3: 0 mg per kg body weight | I2: See placebo | I3: See placebo | Alkalized cocoa mixture (0 mg of the compounds of I1, I2, I3) | Beverage (2.96 ml hot water per kg body weight) |
| Hao et al. [73]         | 2017 | Co-RCT        | *Salacia chinensis* L. | 300 mg unsp. extracts with α-glucosidase inhibitors properties | I1: 300 mg unsp. extracts with α-glucosidase inhibitors properties | I2: 500 mg extracts with α-glucosidase inhibitors properties | n.r. | n.r. | Capsule |
| Hochkogler et al. [57]  | 2014 | Co-RCT        | *Capsicum annuum* L. | 0.15 mg nonivamide (capsaicin analog) | 75 g glucose + 15 μL ethanol | 75 g glucose + 15 μL ethanol | Beverage (300 ml water) |
| Author            | Year | Type of study | Commercial product name | Plant of origin                      | Bioactive phytochemical(s) | Additional compounds/excipients | Placebo                          | Form                          |
|-------------------|------|---------------|--------------------------|------------------------------------|-----------------------------|---------------------------------|---------------------------------|--------------------------------|
| Hochkogler et al. | 2017 | Co-RCT        | n.r.                     | *Eriodictyon californicum* (Hook. & Arn.) Decne. | 30 mg homoeriodictiol sodium salt | 75 g glucose + 15 μL ethanol     | 75 g glucose + 15 μL ethanol     | Beverage (300 ml water)       |
| Janssens et al.   | 2014 | Co-RCT        | n.r.                     | *Capsicum annuum* L.               | 2.56 mg capsaicin (1.03 g of red chili pepper) | n.r.                            | None                            | Beverage                      |
| Josic et al.      | 2010 | Co-RCT        | n.r.                     | *Camellia sinensis* L. Kuntze (green tea) | 9 g of green tea leaf extracts, thereof: 25.5 mg EC, 89.7 mg ECG, <3 mg EGC, 32.4 mg EGCG | n.r.                            | 300 ml hot water                | Beverage (I: 300 ml hot water) |
| Mennella et al.   | 2016 | Co-RCT        | n.r.                     | *Gentiana lutea* L.                | 1.25 g root extracts, thereof: 100 mg secoiridoids | n.r.                            | 100 g pudding                   | Pudding (100 g)                |
| Panek-Shirley et al. | 2018 | Co-RCT        | n.r.                     | *Coffea sp.*                       | Powder anhydrous caffeine: I1: 1 mg per kg body weight I2: 3 mg per kg body weight | Caffeine-free lemon-lime-flavored soda | 0.1 mg bitter tastant (powder quinine hydrochloride dehydrate) pwer ml caffeine-free lemon-lime-flavored soda | Beverage (350 ml juice)       |
| Reinbach et al.   | 2009 | Co-RCT        | n.r.                     | *Capsicum annuum* L. *Camellia sinensis* L. Kuntze (green tea) *Capsicum annuum* L. (CH-19 sweet pepper) *Camellia sinensis* L. + *Camellia sinensis* L. Kuntze (green tea) | I1: 510 mg cayenne I2: 598.5 mg catechins, 77 mg caffeine as tea I3: 2.3 mg capsiate I4: I1 + I2 | n.r.                            | “placebo capsule” + 3.5 dl water | I1 + I3 + P; Capsule (with 3.5 dl water) I2 + I4: Beverage (3.5 dl water) |
| Schubert et al.   | 2014 | Co-RCT        | n.r.                     | *Coffea sp.*                       | I1: 2 mg per kg body weight caffeine I2: 2 mg per kg body weight caffeine + unsp. extracts in coffee | n.r.                            | Psyllium (Metamucil®)            | Capsule (I1 + P: 225 ml water I2: 225 ml decaffeinated coffee) |
| Shin et al.       | 2015 | Co-RCT        | n.r.                     | *Vitis vinifera* L.                | 500 mg grape extracts, thereof: 353 mg polyphenols | n.r.                            | Magnesium stearate              | Capsule                        |
Supplementary Materials

15-HTP, 5-Hydroxytryptophan; Co-RCT, crossover randomized controlled trial; EC, epicatechin; ECG, epicatechin gallate; EGC, epigallocatechin; EGCG, epigallocatechin gallate; I, intervention group; NOPE, N-oleyl-phosphatidylethanolamine; P, placebo group; unsp., unspecified. 1 Yet unresolved in the plant list. 2 Intervention group with psyllium husk and decaffeinated coffee excluded due to our exclusion criteria (seeds).
Supplementary Materials

| Author                          | Year | Type of study | Form  | Daily intake | Time point of intake                                      | Diet / exercise                                                                                                                                 |
|--------------------------------|------|---------------|-------|--------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Auvičhayapat et al. [48]       | 2008 | RCT           | Capsule| 3 x 1        | After breakfast, lunch, and dinner                        | Thai diet, 3 meals daily with 8373.6 kJ/day (2001 kcal) for 12 weeks containing 65 % carbohydrates, 15 % protein, and 20 % fat.         |
| Boix-Castejon et al. [71]      | 2018 | RCT           | Capsule| 1 x 1        | 20 to 30 minutes before breakfast                        | Participants did not follow a balanced, varied and complete diet. The dietary patterns were isocaloric diet equal in total energy (9250 kJ / 2200 kcal per day energy intake), energy density, dietary fiber and macronutrient with normal hydration. Participants were instructed to walk for at least 30 minutes per day. |
| Diepvens et al. [49]           | 2005 | RCT           | Capsule| 3 x 3        | At breakfast, lunch and dinner                           | During days 1 to 87: background caffeine intake was standardized at 300 mg/d in order to maintain their habitual caffeine intake.       |
| Destal et al. [50]             | 2017 | RCT           | Capsule| 2 x 2        | With breakfast and in the evening                        | The day before test day: Adhere to normal energy intake and refrain from exercise and alcohol.                                           |
| Gonzalez et al. [68]           | 2018 | RCT           | Capsule| 2 x 1        | 30 minutes before their two biggest meals of the day     | Consumption of at least two large meals per day, no active adherence to any particular diet plan (e.g., low carbohydrate, ketogenic, vegan, gluten free, intermittent fasting, etc.). They were allowed to eat ad libitum while enrolled in the study. |
| Gout et al. [67]               | 2010 | RCT           | Capsule| 2 x 1        | Before breakfast and dinner                              | Maintenance of usual nutrition regimen and lifestyle.                                                                                      |
| Kazemipoor et al. [15]         | 2016 | RCT           | Beverage| 1 x 1        | 20 minutes before lunch                                  | Habitably performing aerobics during the whole period of the intervention, without changing the dietary habits and the lifestyle patterns. |
| Kudiganti et al. [74]          | 2016 | RCT           | Capsule| 2 x 1        | 30 minutes before breakfast and dinner                   | Vegetarian or non-vegetarian diet of approximately 8368 KJ / 2000 kcal/day consisting of 17 % protein, 25 % fat and 58 % carbohydrate and 30 minutes walk for 5 days per week. |
| Kuriyan et al. [66]            | 2007 | RCT           | Capsule| 2 x 1        | n.r.                                                      | Subjects were provided with standard health advice on diet and physical activity targeted to achieve a weight loss of about 5 to 10 % body weight over the study period. |
| Lejeune et al. [59]            | 2003 | RCT           | Capsule| 3 x 3        | During breakfast, lunch and dinner                       | Very-low-energy diet (Modifast®; Novartis Nutrition, Breda, The Netherlands) during 4 weeks before the supplementation period: |
| Mangine et al. [55]            | 2012 | RCT           | Capsule| 1 x 1 and 1 x 2| 60 min before lunch (one capsule) and dinner (two capsules) | If the subject’s daily calorie intake was at or above their total energy expenditure, they were recommended a diet that was 30 % or 2092 KJ / 500 kcal per day (whichever was greater) less than what they had been consuming. However, the maximum restriction did not exceed 41841 KJ / 1000 kcal per day. Regular exercise schedule including at least 3 days per week, for 30 minutes per day at an intensity that that would elicit between 60 to 75% of the subject’s maximum heart rate. |

Table S5: Nutritional regimens 1.
| Author                  | Year | Type of study | Form     | Daily intake | Time point of intake | Diet / exercise                                                                                                                                 |
|------------------------|------|---------------|----------|--------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Rondanelli et al. [64] | 2013 | RCT           | Capsule  | 1 x 2        | 1 hour before lunch  | For 3 days before the test day: Isoenergetic diet to maintain body weight by providing 55 % of energy as carbohydrates, 15 % as protein, and 30 % as fat. Test day: Arrival after 12 hours of fasting and abstinence from water. Consumption of a standard breakfast at 9.00 hours (3 slices of whole meal bread, a cup of skimmed milk [150 ml], 1 teaspoon of jam) and of a standard lunchtime meal at 12.00 hours (80 g rice, 80 g ham, 50 g white bread, 100 g lettuce, 150 g apple, 15 g olive oil and 500 ml tap water). |
| Rondanelli et al. [72] | 2011 | RCT           | Tablets  | 3 x 1        | Before breakfast, lunch, dinner | Restriction of their daily energy intake by a moderate amount, which is 3344 kJ/day (799 kcal) lower than the daily requirement based on World Health Organization criteria, with a regimen that maintained 25 % of energy from fats, 60 % of energy from carbohydrates and 15 % of energy from proteins. Furthermore, the subjects refrained from any form of exercise for 48 hours before the study. |
| Rondanelli et al. [56] | 2009 | RCT           | Capsule  | 2 x 1        | Before lunch and dinner | Restriction of their daily energy intake by a moderate amount, 3344 kJ/day (799 kcal) less than daily requirements based on World Health Organization criteria, with a regimen that maintained 25 % of energy from fat, 60 % of energy from carbohydrates and 15 % of energy from proteins. |
| Roshan et al. [63]     | 2018 | RCT           | Capsule  | 2 x 1        | With the main meals   | No modification of their physical activity and salt intake. Dietary plan with weight loss recommendations to amend the nutritional habits (30 % total fat, 18 % protein and 52 % carbohydrate). |
| Urbina et al. [58]     | 2017 | RCT           | Pill     | 1 x 1        | After breakfast but before lunch (no empty stomach) | No alteration of diet, avoidance of foods containing chili pepper (i.e., serrano, cayenne, poblano, ancho, jalapeno, etc.) throughout the intervention. Test day: Arrival after 12 hours of fasting and 24 to 48 hours of no strenuous physical activity. |
| Westerterp-Plantenga et al. [54] | 2005 | RCT           | Capsule  | 3 x 2        | Before each meal     | Very low energy diet intervention (2.1 MJ/day, Modifast®) during 4 weeks before the supplementation period: 3 sachets per day, dissolved in water to obtain a milk shake, pudding, soup or muesli. The diet was a protein-enriched formula diet, containing 50 g of carbohydrates, 52 g of protein, 7 g of fat and a micronutrient content that met the Dutch recommended daily allowance. Vegetables and fruit were allowed in addition to Modifast®. The aim was a body weight loss of at least 4 kg over 4 weeks. |
| Alkhatib et al. [65]   | 2015 | Co-RCT        | Capsule  | 1 x 4        | Before 120 minutes resting | No intake of supplements for the duration of the study and no strenuous exercise or alcohol and caffeine consumption for at least 24 hours before each test. Test day: 30 minutes exercise cycling test at their individually determined Fatmax intensity. |
| Alkhatib et al. [28]   | 2017 | Co-RCT        | Capsule  | 1 x 3        | 150 minutes before exercise | No intake of supplements for the duration of the study and no strenuous exercise or alcohol and caffeine consumption for at least 24 hours before each test. Test day: 30 minutes exercise cycling test at their individually determined Fatmax intensity. |
| Fernandes et al. [51]  | 2018 | Co-RCT        | Capsule  | 1 x 2        | With liquid test meal | The day before test day: Standardized dinner, delivered by researchers to avoid alteration in the production of appetite related hormones on the day of the experiment, no physical activity, maintenance of the usual diet. Test day: Arrival after 12 hours of subsequent fasting. |
| Greenberg et al. [60]  | 2012 | Co-RCT        | Beverage | 1 x 1        | Afternoon             | During the study period, participants were asked: 1) To keep diet, exercise, and alcohol intake stable 2) Not to consume caffeinated drinks such as coffee, tea, sodas, or sports drinks; caffeinated medications; caffeinated diet or energy supplements; or decaffeinated coffee 3) Not to smoke |
## Supplementary Materials

| Author                  | Year | Type of study | Form   | Daily intake | Time point of intake | Diet / exercise                                                                                                                                                                                                 |
|-------------------------|------|---------------|--------|--------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Greenberg et al.        | 2016 | Co-RCT        | Beverage | n.r.         | n.r.                | 4) Not to use alcohol  
5) Not perform exercise during the 48 hours prior to each laboratory visit  
6) To eat an identical small breakfast at the same time of day, with no snacks or lunch prior to each lab visit  
Between laboratory sessions, participants were asked:  
1) To eat similar quantities of foods that contained constituents from the same food groups and with similar amounts of macronutrients during the same periods of the day after midnight of the day before each laboratory session  
2) To avoid chocolate or cocoa beverages, tea, coffee, or other caffeinated drinks or tobacco or nicotine products for the duration of the study  
3) To refrain from exercise and use of alcohol or psychotropic drugs during the 48 hours before laboratory sessions |
| Hao et al. [73]         | 2017 | Co-RCT        | Capsule | 1 x 1        | With breakfast      | Before test day: consumption of the same dinner before each of the 3 test days. Test day: arrival after an overnight fast, breakfast meal with 1150 kJ / 275 kcal; 50 % carbohydrate; 30 % fat and 20 % protein. |
| Hochkogler et al. [57]  | 2014 | Co-RCT        | Beverage | 1 x 1        | 2 hours before breakfast | Standardized breakfast: four rolls, 3 slices of bread, 100 g strawberry jam, 60 g honey, 4 slices of ham, 4 slices of cheese, 180 g yogurt, 80 g creamery butter, 20 g sugar, 40 g coffee creamer, 200 ml water, and 200 ml coffee or tea (total energy content of 12.1 MJ / 2890 kcal; 355 g carbohydrates, 126 g fats, and 80 g proteins). Test day: arrival after an overnight fast. |
| Hochkogler et al. [69]  | 2017 | Co-RCT        | Beverage | 1 x 1        | 2 hours before breakfast | Standardized breakfast: 4 rolls, 3 slices of dark bread, 100 g strawberry jam, 60 g honey, 4 slices of ham, 4 slices of cheese, 180 g berry yogurt, 80 g creamery butter, 20 g sugar, 40 g coffee creamer, 200 ml tea or coffee and water ad libitum (total energy content of 12.1 MJ / 2890 kcal; 335 g carbohydrates, 126 g fats, and 79.2 g proteins). Test day: arrival after an overnight fast. |
| Janssens et al. [21]   | 2014 | Co-RCT        | Beverage | 3 x 1        | With breakfast, lunch and dinner | 2 days prior to each session: standardized diet in order to be fed in energy balance (energy % protein/fat/carbohydrate: 15/30/55), and same macronutrient proportions as during the experiment, maintenance of habitual activity level and no consumption of alcohol. The day before test day: No caffeine consumption after 22.00 hours. |
| Josic et al. [52]       | 2010 | Co-RCT        | Beverage | 1 x 1        | With breakfast      | Test day: arrival after a 10 hours overnight fast. Smoking, sniff taking and medication were prohibited in the morning prior to and during the test. |
| Mennella et al. [70]    | 2016 | Co-RCT        | Pudding  | 1 x 1        | With breakfast      | Test day: arrival after an overnight fast, consumption of the pudding (259 kJ / 62 kcal; 9.5 g carbohydrates, 5.5 g protein, 0.2 g fat) and a standardized breakfast (1314 kJ / 314 kcal; 45.1 g carbohydrates, 8.7 g protein, 10.6 g fat). The day before test day: standardized dinner until 22.00 hours. |
| Panek-Shirley et al. [61]| 2018 | Co-RCT        | Beverage | 1 x 1        | 30 minutes before breakfast | 1 day before test day: no beverages and foods containing caffeine, consumption of only plain water as a beverage and no vigorous exercise. Test day: 30 minutes after the supplementation, participants were presented with an ample North American style buffet breakfast (ca. 33 MJ / 7878 kcal). |
| Reinbach et al. [53]    | 2009 | Co-RCT        | Beverage | 3 x 1        | Before each meal    | Participants came fasting in the morning and were served standardized breakfast and lunch during weekdays, whereas they prepared their usual food in the evenings and weekends at home. |
| Author            | Year | Type of study | Form  | Daily intake | Time point of intake | Diet / exercise                                                                                                                                 |
|-------------------|------|---------------|-------|--------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Schubert et al.   | 2014 | Co-RCT        | Capsule | 2 x 1        | With breakfast and at mid-morning | Positive energy balance: 20% of their individually calculated daily energy requirement for breakfast (2013 kJ / 481 kcal) and 40% for lunch (4007 kJ / 958 kcal), additionally ad libitum dinner. Negative energy balance: 10% of their individually calculated daily energy requirement for breakfast (1008 kJ / 241 kcal) and 15% for lunch (1509 kJ / 361 kcal), additionally ad libitum dinner. Normally: 15% of energy requirement for breakfast and 30 to 35% for lunch. 1 day before test day: standardization of food intake (dinner with 3073 ± 506 kJ / 734 kcal ± 121 kcal, 109 ± 20 g carbohydrates, 25 ± 4 g protein and 21 ± 4 g fat, equivalent to ~ 30% of daily energy needs). No strenuous exercise, no alcohol, no foods naturally enriched in 13C (corn and corn-based products, kiwi, pineapple, cane sugar) 2 days before test day: no consumption of anything containing caffeine or known to influence caffeine metabolism (i.e. cruciferous vegetables, charcoal-broiled beef, aspirin, and cimetidine). Test day: arrival after an overnight-fast (nothing than water after 22.00 hours). |
| Shin et al.       | 2015 | Co-RCT        | Capsule | I1: 1 x 1 and 1 x 2 placebo I2: 1 x 3 | With breakfast | Test day: arrival after an overnight fast, standardized breakfast: 2 MJ high starch, low-polyphenol (185 g white bread containing 83 g polysaccharide starch, 1943 kJ / 464 kcal). Washout period: free to resume usual diet and exercise patterns. |

1 Co-RCT, crossover randomized controlled trial; I, intervention; n.r., not reported; RCT, randomized controlled trial.
Table S6: Primary outcomes.

| Study. | Year | Type of study | Plant extract(s) of ↑ | Appetite | Hunger | Satiety | Fullness |
|--------|------|---------------|-----------------------|----------|--------|---------|----------|
| Auvichayapat et al. [48] | 2008 | RCT | Camellia sinensis (green tea) | n.r. | n.r. | 0 | n.r. |
| Boix-Castejon et al. [71] | 2018 | RCT | Hibiscus sabdariffa + Aloysia citriodora | n.r. | + | + | + |
| Diepvens et al. [49] | 2005 | RCT | Camellia sinensis (green tea) | 0 | - | 0 | 0 |
| Dostal et al. [50] | 2017 | RCT | Camellia sinensis (green tea) | n.r. | 0 | 0 | 0 |
| Gonzalez et al. [68] | 2018 | RCT | Crocus sativus + Citrus paradisi | n.r. | 0 | 0 | 0 |
| Gout et al. [67] | 2010 | RCT | Crocus sativus | n.r. | + | 0 | n.r. |
| Kazemipoor et al. [15] | 2016 | RCT | Carum carvi | + | n.r. | n.r. | n.r. |
| Kudiganti et al. [74] | 2016 | RCT | Sphaeranthus indicus + Garcinia mangostana | n.r. | n.r. | + | n.r. |
| Lejeune et al. [59] | 2003 | RCT | Caralluma adscendens var. fimbriata | n.r. | + | n.r. | 0 |
| Mangine et al. [55] | 2012 | RCT | Capsicum annuum | n.r. | 0 | 0 | n.r. |
| Rondanelli et al. [64] | 2013 | RCT | Camellia sinensis (green tea) + Capsicum annuum + Piper nigrum + Fucus vesiculosus + Allium sativa | n.r. | n.r. | + | + |
| Rondanelli et al. [72] | 2011 | RCT | Phaseolus vulgaris + Cynara scolymus | n.r. | n.r. | ++ | n.r. |
| Rondanelli et al. [56] | 2009 | RCT | Camellia sinensis (green tea) | + | n.r. | n.r. | n.r. |
| Roshan et al. [63] | 2018 | RCT | Coffea sp. | + | n.r. | n.r. | n.r. |
| Urbina et al. [58] | 2017 | RCT | Capsicum annuum | 0 | n.r. | n.r. | n.r. |
| Westerterp-Plantenga et al. [54] | 2005 | RCT | Camellia sinensis (green tea) | n.r. | 0 | 0 | n.r. |
| Alkhatib et al. [65] | 2015 | Co-RCT | Camellia sinensis (green tea) + Ilex paraguariensis (Yerba Maté) + Paullinia cupana + Coffea sp. + Serenoa repens + Polygonum multiflorum + Eleutherococcus senticosus + Capsicum annuum + Pausinystalia yohimbe | n.r. | n.r. | 0 | n.r. |
| Alkhatib et al. [28] | 2017 | Co-RCT | Ilex paraguariensis (Yerba Maté) | n.r. | 0 | n.r. | 0 |
| Fernandes et al. [51] | 2018 | Co-RCT | Camellia sinensis | n.r. | 0 | n.r. | + |
| Greenberg et al. [75] | 2016 | Co-RCT | I1: Theobroma cacao (nonalkalized cocoa mixture) | n.r. | 0 | 0 | + |
| | | | I2: Theobroma cacao (epicatechin) | n.r. | + | + | + |
| | | | I3: Theobroma cacao (procyanidins) | n.r. | n.r. | n.r. | n.r. |
| Greenberg et al. [60] | 2012 | Co-RCT | I1: Coffea sp. (caffeine) | n.r. | 0 | 0 | n.r. |
| | | | I2: Coffea sp. (coffee caffeinated) | n.r. | 0 | 0 | n.r. |
| | | | I3: Coffea sp. (coffee decaffeinated) | n.r. | ++ | 0 | n.r. |
| Hao et al. [73] | 2017 | Co-RCT | Salacia chinensis | n.r. | 0 | 0 | 0 |
| Hochkogler et al. [57] | 2014 | Co-RCT | Capsicum annuum | n.r. | + | n.r. | n.r. |
| Hochkogler et al. [69] | 2017 | Co-RCT | Eriodictyon californicum | n.r. | 0 | n.r. | n.r. |
| Janssens et al. [21] | 2014 | Co-RCT | Capsicum frutescens + Capsicum annuum | n.r. | 0 | + | + |
## Supplementary Materials

| Study                          | Year | Type of study | Plant extract(s) of ² | Appetite | Hunger | Satiety | Fullness |
|-------------------------------|------|---------------|-----------------------|----------|--------|---------|----------|
| Josic et al. [52]             | 2010 | Co-RCT        | *Camellia sinensis* (green tea) | n.r.     | 0      | +       | +        |
| Mennella et al. [70]          | 2016 | Co-RCT        | *Gentiana lutea*      | n.r.     | 0      | 0       | 0        |
| Panek-Shirley et al. [61]     | 2018 | Co-RCT        | *Coffea sp.*          | n.r.     | 0      | n.r.    | 0        |
| Reinbach et al. [53]          | 2009 | Co-RCT        | 11: *Capsicum annuum* (cayenne) | n.r.     | +      | +       | +        |
|                              |      |               | 12: *Camellia sinensis* (green tea) | n.r.     | +      | 0       | +        |
|                              |      |               | 13: *Capsicum annuum* (CH-19 sweet pepper) | n.r.     | 0      | 0       | 0        |
|                              |      |               | 14: *Capsicum annuum* (cayenne) + *Camellia sinensis* (green tea) | n.r.     | ++     | ++      | ++       |
| Schubert et al. [62]          | 2014 | Co-RCT        | 11: *Coffea sp.* (caffeine) | n.r.     | 0      | n.r.    | 0        |
|                              |      |               | 12: *Coffea sp.* (caffeine + decaffeinated coffee) | n.r.     | 0      | n.r.    | 0        |
| Shin et al. [76]              | 2015 | Co-RCT        | *Vitis vinifera*      | n.r.     | 0      | n.r.    | 0        |

¹ Co-RCT, crossover randomized controlled trial; n.r., not reported; RCT, randomized controlled trial. ² For accepted scientific name and exact composition see Table S4. ³ Intervention group with psyllium husk and decaffeinated coffee excluded due to our exclusion criteria (seeds). “-” – Significant treatment effect (p < 0.05) in favour of the placebo group. “0” – No significant treatment effect (p > 0.05). “+” – Some evidence: significant treatment effect (p < 0.05) in favour of the intervention group in at least one follow-up comparison. “++” – Strong evidence: significant treatment effect (p < 0.05) in favour of the intervention group in all follow-up comparisons.
## Supplementary Materials

### Table S7: SIGN checklist for randomized controlled trials [46] ¹

| Author                          | Year | Type of study | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 I/C, % | 1.9 | 1.10 | 2.1 |
|---------------------------------|------|---------------|-----|-----|-----|-----|-----|-----|-----|------------|-----|-------|-----|
| Auvichayapat et al. [48]        | 2008 | RCT           | Y   | CS  | N   | CS  | Y   | Y   | Y   | 0/0        | Y   | NA    | 0   |
| Boix-Castejon et al. [71]       | 2018 | RCT           | Y   | Y   | Y   | Y   | Y   | Y   | 10/15 | Y          | NA  | ++     |    |
| Diepvens et al. [49]            | 2005 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 0/0        | Y   | NA    | +   |
| Dostal et al. [50]              | 2017 | RCT           | Y   | Y   | N   | Y   | Y   | Y   | Y   | 12/0       | N   | NA    | +   |
| Gonzalez et al. [68]            | 2018 | RCT           | Y   | CS  | N   | Y   | CS  | Y   | Y   | 0/0        | Y   | NA    | 0   |
| Gout et al. [67]                | 2010 | RCT           | Y   | Y   | Y   | Y   | Y   | Y   | Y   | 0/3.3      | N   | NA    | ++  |
| Kazemipoor et al. [15]          | 2016 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 11/17      | N   | NA    | 0   |
| Kudiganti et al. [74]           | 2016 | RCT           | Y   | Y   | Y   | Y   | Y   | Y   | Y   | 3/7        | N   | NA    | ++  |
| Kuriyan et al. [66]             | 2007 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 19/19      | N   | NA    | 0   |
| Lejeune et al. [59]             | 2003 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | n.r.       | N   | NA    | 0   |
| Mangine et al. [55]             | 2012 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 36/36      | N   | NA    | 0   |
| Rondanelli et al. [64]          | 2013 | RCT           | Y   | Y   | N   | Y   | Y   | Y   | Y   | 0/0        | Y   | NA    | ++  |
| Rondanelli et al. [72]          | 2011 | RCT           | Y   | Y   | Y   | Y   | Y   | Y   | Y   | 0/5        | N   | NA    | ++  |
| Rondanelli et al. [56]          | 2009 | RCT           | Y   | Y   | N   | Y   | Y   | Y   | Y   | 6/27       | Y   | NA    | ++  |
| Roshan et al. [63]              | 2018 | RCT           | Y   | Y   | Y   | Y   | Y   | Y   | Y   | 16/12      | N   | NA    | ++  |
| Urbina et al. [58]              | 2017 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 23/44/24   | N   | NA    | 0   |
| Westerterp-Plantenga et al. [54]| 2005 | RCT           | Y   | CS  | N   | Y   | Y   | Y   | Y   | 0/0        | Y   | NA    | +   |
| Alkhathib et al. [65]           | 2015 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 0          | Y   | NA    | +   |
| Alkhathib et al. [28]           | 2017 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 42.9       | N   | NA    | 0   |
| Fernandes et al. [51]           | 2018 | Co-RCT        | Y   | Y   | N   | Y   | CS  | Y   | Y   | 8/0        | N   | NA    | +   |
| Greenberg et al. [75]           | 2016 | Co-RCT        | Y   | Y   | N   | Y   | CS  | Y   | Y   | 6.7        | N   | NA    | +   |
| Greenberg et al. [60]           | 2012 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 0          | Y   | NA    | +   |
| Hao et al. [73]                 | 2017 | Co-RCT        | Y   | Y   | N   | Y   | CS  | Y   | Y   | 11.1       | Y   | NA    | ++  |
| Hochkogler et al. [57]          | 2014 | Co-RCT        | Y   | CS  | CS  | CS  | CS  | Y   | Y   | 0          | Y   | NA    | 0   |
| Hochkogler et al. [69]          | 2017 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 29.2       | N   | NA    | 0   |
| Janssens et al. [21]            | 2014 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 21.1       | N   | NA    | 0   |
| Josic et al. [52]               | 2010 | Co-RCT        | Y   | CS  | N   | N   | CS  | Y   | Y   | 6.7        | N   | NA    | 0   |
| Mennella et al. [70]            | 2016 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | CS         | CS  | NA    | 0   |
| Panek-Shirley et al. [61]       | 2018 | Co-RCT        | Y   | Y   | N   | Y   | CS  | Y   | Y   | 5.7        | N   | NA    | +   |
| Reinbach et al. [53]            | 2009 | Co-RCT        | Y   | Y   | N   | Y   | CS  | Y   | Y   | CS         | CS  | NA    | 0   |
| Schubert et al. [62]            | 2014 | Co-RCT        | Y   | Y   | Y   | Y   | CS  | Y   | Y   | 33.3       | N   | NA    | ++  |
| Shin et al. [76]                | 2015 | Co-RCT        | Y   | CS  | N   | Y   | CS  | Y   | Y   | 0          | Y   | NA    | ++  |

¹ C, control; Co-RCT, crossover randomized controlled trial; CS, can’t say; I, intervention; N, no; NA, not applicable; RCT, randomized controlled trial; Y, yes. 1.1 – appropriate and clearly focused question; 1.2 – assignment is randomized; 1.3 - adequate concealment method; 1.4 – blinding; 1.5 – groups are similar at baseline; 1.6 – treatment under investigation is the only difference; 1.7 – all relevant outcomes are measured in a standard, valid and reliable way; 1.8 - percentage of drop-outs in each treatment arm, 1.9 – intention to treat analysis; 1.10 – various sites are comparable; 2.1 – risk of bias: high quality (++): most of the criteria have been fulfilled (if at most one criterion was answered with a “no” or “can’t say”); acceptable quality (+): some criteria fulfilled (if at most two criteria were answered with a “no” or “can’t say”); low quality (0): few criteria fulfilled (if at most four criteria were answered with a “no” or “can’t say”); unacceptable (-): study rejected (if more than four criteria were answered with a “no” or “can’t say”). For Co-RCTs criterion 1.5 was not applicable and therefore not considered for the final rating.