Supplementary Table S1. Adjustments and Exclusion criteria of the included studies.

| Study | Adjustments | Adjustments via Exclusion Criteria |
|---|---|---|
| Li et al., 2017 [4] | Gender, Age, BMI, TC, Triglycerides, HDL, LDL, FBG | Cancer, Heart Failure, Renal Failure, Smoking habits, Stroke, Peripheral Artery Disease, Antihypertensive Treatment, Diabetes Mellitus, Hypercholesterolemia, Recent Antibiotic/Probiotic use (8 weeks) |
| Yan et al., 2017 [18] | Gender, Age, BMI, FBG, HDL, LDL, TC, Triglycerides | Not specified |
| Jackson et al., 2018 [7] | Age, BMI, Technical confounders (DNA sequencing depth, sample handling) | Not specified |
| Mushtaq et al., 2019 [19] | Gender, Age, Weight, TC, HDL | Acute/Chronic inflammatory diseases, Cardiovascular disease, Chronic metabolic disease, Recent Antibiotic/Probiotic use (30 days) |
| Dan et al., 2019 [20] | Gender, Age, BMI, Waist-to-Hip Ratio, FBG, TC, HDL, LDL, Triglycerides, Blood Urea Nitrogen, Uric Acid, Homocysteine | Mental illness, Drug abuse, Cancer, Heart failure, Renal failure, Stroke, Peripheral artery disease, Antihypertensive therapy, Recent Antibiotic/Probiotic use (8 weeks) |
| Calderón-Pérez et al., 2020 [21] | Gender, HDL, Triglycerides, Physical activity, Sleep quality, TC, Fat Mass, FBG, Waist Circumference, BMI, LDL, Weight | BMI ≥ 30 kg/m², Fasting glucose > 126 mg/dL, LDL > 190 mg/dL, Triglycerides > 350 mg/dL, Smoking habits, Anemia, Intestinal disorders, Recent Antibiotic/Probiotic use (3 months), Vegetarian diet |
| Takagi et al., 2020 [22] | Age, Gender | Gastrointestinal diseases, Antibiotics/Corticosteroids/Immunosuppressants/Proton pump inhibitors, Malignant diseases, Severe metabolic/respiratory/neurological diseases, Pregnancy, Recent Probiotic use |
| Zhu et al., 2020 [23] | Age, Gender, Smoking habits, BMI, TC, Triglycerides, HDL, LDL | Gastrointestinal diseases, Antibiotics/Probiotics use (3 months), Cancer, Diabetes, Obesity, Cardiovascular diseases, Renal failure, Stroke, Peripheral artery disease, NSAID use |
| Silveira-Nunes et al., 2020 [24] | Age, Gender | infections, Schistosoma mansoni, Autoimmune diseases, Mood disorders, Neurodegenerative diseases, Cancer, Recent Antibiotic/Probiotic use, Anemia, Leucopoenia, Use of steroids, Alcohol use, Antidepressants use |
| Palmu et al., 2020 [25] | Age, Gender, BMI, Smoking habits, Exercise, Diabetes, Diuretic use, Beta-blocker use, Calcium channel blocker use, Renin-angiotensin system inhibitors use | Not specified |
| Verhaar et al., 2020 [26] | Gender, Age, BMI, eGFR, Antihypertensive drugs, Lipid-lowering drugs treatment, Albuminuria, Diabetes, Smoking habits | Recent antibiotic use (3 weeks), Diarrhea (1 week), Conditions affecting stool sample provision |
| Sun et al., 2020 [3] | Field center, Gender, Race, Age, Education, Physical activity, Smoking habits, Diet quality, Antihypertensive medication use, BMI, Waist circumference | Pregnancy, Recent Antibiotic use (1 month), Inflammatory bowel disease, Gastrointestinal illness (1 week) |

Supplementary Table S1. Adjustments and Exclusion criteria of the included studies.

| | | |
|---|---|---|
| Nakai et al., 2021 [5] | Age, BMI, Dietary fiber intake | Gastrointestinal disease, Diabetes, Chronic kidney disease, Recent Antibiotic/Probiotic use (3 months) |
| Wan et al., 2021 [27] | Gender, Age, BMI | Recent Antibiotic/Probiotic use (30 days), Digestive system disease, Gastrointestinal surgery, Cardiovascular diseases, Stroke, Kidney failure, Cancer, Diabetes |
| Wang JM et al., 2021 [28] | Age, Gender, BMI, Pulse, FBG, TC, RBC count, WBC count | Secondary hypertension, Cardiovascular, Digestive, Respiratory diseases, Cancer, Epilepsy, Sleep Apnea, Psychiatric symptoms, Pregnancy, Laboratory abnormalities, Recent drug use, Participation in trials |
| Liu Y et al., 2021 [29] | Gender, BMI, Triglycerides, TC, HDL, LDL, Smoking habits, Alcohol use | Recent Antibiotic use (3 months), Inflammatory bowel disease, Tumors of digestive system, Gastrointestinal surgery, Recurrent diarrhea or constipation (1 month) |
| Wang Y et al., 2021 [17] | Age, Gender, Provinces, Urbanization index, Income, Education level, Energy intake, Animal-source food, Sodium intake, Physical activity, Smoking habits, Alcohol use, eGFR, BMI (in some models) | Not specified |
| Qu et al., 2022 [16] | Age, gender, BMI, Education level | Neurological/psychiatric disorders, Digestive system diseases, Diabetes, Respiratory diseases, Stroke, Recent Antibiotic/Probiotic use, Substance dependence |

Abbreviations: HDL, High-Density Lipoprotein; LDL, Low-Density Lipoprotein; RBC, Red Blood Cell; WBC, White Blood Cell; BMI, Body Mass Index; eGFR, estimated Glomerular Filtration Rate; FBG, Fasting Blood Glucose; TC, Total Cholesterol; NSAID, Non-Steroidal Anti-Inflammatory Drug