**Table S1. Search Terms.**

|  |
| --- |
| **Medline (PubMed)** |
| Search hits 90  ("Probiotics"[Mesh] OR probiotic\*[tw] OR "Synbiotics"[Mesh] OR synbiotic\*[tw] OR "yogurt"[Mesh] OR yogurt\*[tw] OR "lactococcus"[Mesh] OR lactococcus\*[tw] OR "lactobacillus"[Mesh] OR lactobacillus\*[tw] OR "bifidobacterium"[Mesh] OR bifidobacterium\*[tw] OR "streptococcus"[Mesh] OR streptococcus\*[tw])  AND  (weight change\*[tw] OR weight gain\*[tw] OR weight reduction\*[tw] OR weight management\*[tw] OR weight loss\*[tw] OR weight regulation\*[tw] OR weight modification\*[tw] OR "Obesity"[Mesh] or obes\*[tw] OR "Overweight"[Mesh] OR overweight[tw])  Filters: Meta Analysis; Systematic Review |
| **Cochrane Library**  Search hits 51  #1 probiotic\* or synbiotic\* or lactococcus or streptococcus or bifidobacterium or lactobacillus:ti,ab,kw  #2 “weight change\*” or “weight gain\*” or “weight reduction” or “weight management” or “weight loss\*” or “weight regulation\*” or “weight modification” or obes\* or overweight:ti,ab,kw  #3 MeSH descriptor: [Probiotics] explode all trees  #4 MeSH descriptor: [Synbiotics] explode all trees  #5 MeSH descriptor: [Lactococcus] explode all trees  #6 MeSH descriptor: [Streptococcus] explode all trees  #7 MeSH descriptor: [Bifidobacterium] explode all trees  #8 MeSH descriptor: [Lactobacillus] explode all trees  #9 #1 or #3 or #4 or #5 or #6 or #7 or #8  #10 MeSH descriptor: [Obesity] explode all trees  #11 MeSH descriptor: [Overweight] explode all trees  #12 #2 or #10 or #11  #13 #9 and #12  Filters: Cochrane Reviews |
| **ScienceDirect**  Search hits 222  (“Probiotic” OR “Synbiotic” OR "bifidobacterium" OR "lactobacillus" OR "lactococcus" OR "streptococcus") AND (“weight” OR "overweight" OR “obesity”)  Filters: Review articles; Research articles; Title, abstract, keywords: meta-analysis AND NOT pregnancy AND NOT children AND NOT liver AND NOT animal |
| **Google Scholar**  Search hits 135  intitle:+"meta-analysis" +(probiotic OR synbiotic OR yogurt OR lactococcus OR lactobacillus OR bifidobacterium OR streptococcus) +(obesity OR overweight) -children -child -animals -pregnant -"liver disease" -pcos |

**Table S2. Randomized Controlled Trials included in Meta-analyses.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author (year) | Publication year | Borgeraas (2017) | Cao (2020) | Companys (2020) | Dong (2019) | Dror (2017) | Hadi (2020) | John (2018) | Koutnikova (2019) | Park (2015) | Skonieczna-Zydecka (2020) | Sun (2015) | Suzumura (2019) | Wang (2019) | Zhang (2016) |
| Probiotic analysis |  | Yes |  | Yes | Yes | Yes |  | Yes |  | Yes |  | Yes | Yes | Yes |  |
| Pro + Synbiotic combination analysis |  |  | Yes |  |  |  |  | Yes | Yes |  | Yes |  | Yes |  | Yes |
| Synbiotic analysis |  |  |  |  |  | Yes | Yes | Yes |  |  |  |  | Yes |  |  |
| Agerholm-Larsen | 2000 | 1 |  |  |  | 1 |  |  | 1 |  |  |  | 1 |  | 1 |
| Ahmadi | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Ahn | 2015 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Ahn, Sang Bong | 2019 |  | 1 |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Aihara | 2005 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Akbari | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Akkasheh | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Alisi | 2014 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Aller | 2011 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Andreasen | 2010 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Asemi | 2013 |  |  |  |  |  |  | 1 | 1 |  |  | 1 |  |  | 1 |
| Asemi | 2014 |  |  |  |  |  | 1 |  | 1 |  |  |  |  |  | 1 |
| Asgharian | 2017 |  |  |  |  |  | 1 |  | 1 |  |  |  |  |  |  |
| Asghari-Jafarabadi Rad | 2014 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Badehnoosh | 2018 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Bahmani | 2015 |  |  |  |  |  | 1 |  | 1 |  |  |  |  |  |  |
| Barreto | 2014 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Behrouz | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Bernini | 2016 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Bonorden | 2004 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Brahe | 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Burton | 2017 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Canfora | 2017 |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Chang BJ | 2011 |  |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 |
| Chung | 2016 | 1 |  | 1 |  |  |  |  | 1 |  |  |  | 1 | 1 |  |
| De Lorenzo | 2017 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| De Roos | 1999 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dolatkhah (2015 & Hajifaraji 2018) | 2015 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Doria | 2013 |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| Ebrahimi | 2017 |  |  |  |  |  | 1 |  | 1 |  |  |  |  |  |  |
| Ejtahed | 2012 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ekhlasi | 2016 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Eslamparast (1) NAFLD | 2014 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Esmaeilinezhad | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Famouri | 2017 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Farrokhian | 2017 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Fathi | 2016 |  |  |  |  | 1 |  |  |  |  |  |  | 1 | 1 |  |
| Feizollahzadeh | 2016 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fernandes | 2016 |  |  |  |  |  | 1 | 1 |  |  |  |  |  |  |  |
| Ferolla | 2016 |  | 1 |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Firouzi | 2015, 2016 |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |
| Ghanei | 2018 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gobel | 2012 |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |  |
| Gomes | 2017 |  | 1 | 1 | 1 |  |  | 1 | 1 |  | 1 |  | 1 | 1 |  |
| Hariri | 2015 | 1 |  |  | 1 | 1 |  |  | 1 |  |  |  |  |  |  |
| Hata | 1996 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Higashikawa | 2010 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Higashikawa | 2016 |  | 1 | 1 |  |  |  | 1 |  |  | 1 |  | 1 | 1 |  |
| Hove | 2015 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Hulston | 2015 |  |  |  |  | 1 |  |  | 1 |  |  |  |  |  |  |
| Hutt | 2014 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Ibrahim | 2018 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  |  |
| Ilmonen | 2011 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Inoue | 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Inoue | 2018 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Ivey | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Jafarnejad | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Jamilian | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Javadi | 2017 |  |  |  |  |  | 1 | 1 | 1 |  |  |  |  |  |  |
| Jones | 2018 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Jung | 2013 | 1 | 1 | 1 |  | 1 |  | 1 | 1 |  |  | 1 |  |  |  |
| Jung | 2015 |  | 1 |  |  |  |  | 1 | 1 |  |  |  |  | 1 |  |
| Kadooka | 2010 | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 |  | 1 | 1 | 1 |  | 1 |
| Kadooka | 2013 |  |  | 1 | 1 | 1 |  | 1 |  |  |  |  |  |  | 1 |
| Karamali | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Karbaschian | 2018 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Kassaian | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Khalili | 2018 |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |
| Kijmanawat | 2018 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Kim | 2017 |  | 1 |  |  |  |  | 1 |  |  | 1 |  | 1 | 1 |  |
| Kim | 2018 |  |  |  |  |  |  |  |  |  | 1 |  |  | 1 |  |
| Klein | 2008 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Kobyliak | 2018 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |
| Kouchaki | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Laitinen | 2008 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lambert | 2017 |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Leber | 2012 |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Lee | 2014 | 1 | 1 |  | 1 | 1 |  |  | 1 | 1 |  | 1 | 1 |  |  |
| Lee | 2017 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lindsay | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lindsay | 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Macfarlane | 2013 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Madjd | 2016 | 1 | 1 | 1 |  |  |  | 1 | 1 |  | 1 |  | 1 | 1 |  |
| Mahadzir | 2017 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |
| Mahboobi | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Manzhalii | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Mazloom | 2013 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Minami | 2015 | 1 | 1 | 1 |  |  |  | 1 | 1 |  |  |  | 1 |  |  |
| Minami | 2018 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Miraghajani | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Mitchell | 2012 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Mitchell | 2012 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Mobini | 2017 |  | 1 |  |  |  |  |  | 1 |  |  |  | 1 |  |  |
| Mofidi | 2017 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mohamadshahi | 2014 |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  | 1 |
| Mohammad | 2013 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Mohseni | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Moludi | 2019 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Nabavi | 2014 | 1 |  |  |  |  |  |  | 1 |  |  |  | 1 |  | 1 |
| Naito | 2017 |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |
| Nakamura | 2018 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Naruszewicz | 2002 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | 1 |
| Nasri | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Neto | 2013 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Odamaki | 2016 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Ogawa | 2014 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Omar | 2013 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Ostadrahimi | 2015 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Osterberg | 2015 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
| Pedret | 2018 |  | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| Pena | 2014 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Rabiei | 2015 |  | 1 |  |  |  | 1 | 1 |  |  |  |  | 1 |  |  |
| Rajkumar | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rajkumar | 2015 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Reiner | 2017 |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Sabico | 2017 |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |
| Sadrzadeh-Yeganeh | 2010 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | 1 |
| Safavi | 2013 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Samimi | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Sanchez | 2014 |  |  |  |  | 1 |  | 1 | 1 |  |  |  |  |  | 1 |
| Sanchez | 2017 |  |  |  | 1 |  |  |  |  |  |  |  | 1 |  |  |
| Sato | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Savard | 2011 |  |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 |
| Sayari | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Sepideh | 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Shakeri | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
| Shavakhi | 2013 |  |  |  |  |  |  |  | 1 |  |  |  |  |  | 1 |
| Sharafedinov | 2013 | 1 | 1 |  | 1 |  |  | 1 | 1 | 1 |  |  | 1 |  | 1 |
| Sherf-Dagan | 2017 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Simon | 2015 | 1 |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Stenman | 2016 |  |  |  |  |  |  |  | 1 |  |  |  | 1 | 1 |  |
| Szulinska | 2018 |  | 1 | 1 |  |  |  |  |  |  | 1 |  |  | 1 |  |
| Tajabadi-Ebrahimi | 2017 |  | 1 |  |  |  | 1 |  | 1 |  |  |  | 1 |  |  |
| Tajadadi | 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Takahashi | 2016 |  | 1 |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Tenorio-Jimenez | 2019 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Tonucci | 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tovar | 2012 |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |
| Tripold | 2013 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Vajro | 2011 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| Woodard | 2009 |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| Xavier-Santos | 2018 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Zamani | 2017 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| Zarrati | 2013 |  | 1 |  | 1 |  |  |  |  | 1 |  |  | 1 |  | 1 |
| Zarrati | 2014 | 1 |  |  |  | 1 |  | 1 | 1 |  | 1 |  |  | 1 |  |
| Zarrati | 2018 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Total number of RCTs |  | 13 | 29 | 17 | 8 | 14 | 21 | 20 | 68 | 4 | 16 | 4 | 19 | 11 | 20 |

Abbreviations: 1 = Yes for each RCT included in meta-analysis, RCT = Randomized Controlled Trial.

**Table S3. Characteristics of Meta-analyses.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author (year) | Borgeraas (2017) | Cao (2020) | Companys (2020) | Dong (2019) | Dror (2017) | Hadi (2020) | John (2018) | Koutnikova (2019) | Park (2015) | Skoniezna-Zydecka (2020) | Sun (2015) | Suzumura (2019) | Wang (2019) | Zhang (2016) |
| **Study selection** | | | | | | | | | | | | | | |
| RCT, PA or CO | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Observational |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |
| **Population included in analysis** | | | | | | | | | | | | | | |
| Adults | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Children |  |  |  | 1 | 1 |  |  | 1 |  |  |  |  |  |  |
| Other: pregnant, bariatric surgery |  |  |  | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Normal weight | 1 |  |  | 1 | 1 |  |  | 1 |  | 1 | 1 |  |  | 1 |
| Overweight or Obese | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Participants with comorbidities included in some trials | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 |  |  | 1 |
| **Intervention included in analysis** | | | | | | | | | | | | | | |
| Probiotics | 1 |  | 1 | 1 | 1 |  | 1 |  | 1 |  | 1 | 1 | 1 |  |
| Synbiotics |  |  |  |  | 1 | 1 | 1 |  |  |  |  | 1 |  |  |
| Pro + synbiotics |  | 1 |  |  |  |  |  | 1 |  | 1 |  | 1 |  | 1 |
| Pro + syn + prebiotics |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| **Probiotic form: food or supplements** | | | | | | | | | | | | | | |
| Food | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Supplements | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Outcomes** | | | | | | | | | | | | | | |
| Body weight analysis | 1 |  | 1 |  | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 |
| BMI | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Waist circumference |  | 1 | 1 | 1 |  | 1 |  | 1 |  | 1 | 1 | 1 | 1 |  |
| Body fat, kg | 1 |  | 1 | 1 |  | 1 | 1 | 1 |  |  |  |  | 1 |  |
| Body Fat, % | 1 | 1 | 1 | 1 |  |  |  |  |  |  |  |  | 1 |  |
| **Other outcomes** | | | | | | | | | | | | | | |
| SBP |  |  |  | 1- |  |  |  |  |  | 1- |  |  |  |  |
| DBP |  |  |  | 1- |  |  |  |  |  | 1- |  |  |  |  |
| Fasting Glucose |  |  | 1+ | 1- |  |  |  | 1+ |  | 1- |  |  | 1+ |  |
| HbA1c |  |  | 1+ | 1- |  |  |  | 1+ |  | 1- |  |  | 1- |  |
| Insulin |  |  | 1+ | 1- |  |  |  | 1+ |  |  |  |  | 1+ |  |
| HOMA-IR |  |  | 1+ |  |  |  |  | 1+ |  | 1- |  |  | 1+ |  |
| ALT |  |  |  |  |  |  |  | 1+ |  |  |  |  |  |  |
| AST |  |  |  |  |  |  |  | 1+ |  |  |  |  |  |  |
| GGT |  |  |  |  |  |  |  | 1- |  |  |  |  |  |  |
| WHR |  | 1- |  |  |  |  |  |  |  |  |  |  |  |  |
| Adiponectin |  | 1- |  |  |  |  |  |  |  |  |  |  |  |  |
| TC |  |  | 1+ | 1+ |  |  |  |  |  | 1- | 1+ |  | 1+ |  |
| TG |  |  |  | 1- |  |  |  |  |  | 1- | 1- |  | 1- |  |
| LDL |  |  | 1+ | 1+ |  |  |  |  |  | 1- | 1+ |  | 1+ |  |
| HDL |  |  |  | 1- |  |  |  |  |  | 1- | 1- |  | 1- |  |
| VFA |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| SCFA |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| CRP |  |  |  |  |  |  |  |  |  | 1- | 1- |  |  |  |
| TNF-alpha |  |  |  |  |  |  |  |  |  |  | 1- |  |  |  |
| **Risk of disease from the Observational meta-analysis** | | | | | | | | | | | | | | |
| Fermented dairy intake AND risk of stroke, IHD, CV |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| Yogurt AND risk of DM2 |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| Cheese AND risk of DM2 |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| Yogurt AND risk of metabolic syndrome |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| OBS study Probiotic in dairy product AND fasting glucose |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| OBS study Probiotic in dairy product AND TC |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| OBS study Probiotic in dairy product AND LDL |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| OBS study Probiotic in dairy product AND HDL |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| OBS study Probiotic in dairy product AND TG |  |  | 1+ |  |  |  |  |  |  |  |  |  |  |  |
| **Statistical analysis** | | | | | | | | | | | | | | |
| Effect measure: Difference in mean change = (Final minus baseline), if several measurements then the change between the last preintervention measurement and the measurement at the end of the administration period | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Weighted mean differences | 1 | 1 |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Standard mean difference |  |  | 1 | 1 | 1 |  |  |  |  | 1 |  |  |  |  |
| Coefficients of intrasubject correlation assumption | 0.9 | 0.5 |  |  |  | 0.5 |  | 0.5 |  |  |  | 0.9 |  |  |
| Model: random or fixed effect |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Random effect | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 | 1 |
| Fixed effect |  |  |  | 1 | 1 |  |  |  | 1 |  |  |  |  |  |
| Heterogeneity assessment: Funnel plot and I2 statistics: I2 value: low (I2: 0%–25%), intermediate (I2: 25%–50%), moderate (I2: 50%–75%) and high (I2≥75%). | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Quality of trials assessment | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Publication bias assessment | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sensitivity analysis to assess the source of heterogeneity | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 | 1 |

Abbreviations: 1 = Yes for each specific variable, 1+ means assessed, and effect observed, 1- means assessed and effect not observed, ALT = alanine transaminase, AST = aspartate transaminase, CO = crossover study, CRP = C-reactive protein, CV = cardiovascular, DBP = diastolic blood pressure, DM2 = diabetes mellitus type 2, GGT = gamma-glutamyl transferase, HbA1c = hemoglobin A1C, HDL = high-density lipoprotein, HOMA-IR = homeostatic model assessment of insulin resistance, IHD = ischemic heart disease, OBS = observational study, PA = parallel group, Pro = probiotic, RCT = randomized controlled trial, SBP = systolic blood pressure, SCFA = short-chain fatty acid, Syn = synbiotic, TC = total cholesterol, TG = triglyceride, TNF-a = tumor necrosis factor alpha, VFA = visceral fat area, WHR = waist-to-hip ratio.