

Supplementary Table 1. Description of the PICOS criteria.

PICOS criteria	Description
Participants	Healthy or unhealthy adults aged 18 years or older
Intervention	Probiotic or synbiotic supplementation
Comparison	Matched placebo
Outcome	Brain-derived neurotrophic factor
Study design	Randomized controlled trial

Supplementary Table 2. Detailed search strategy for each database or search engine.

Database or search engine	Search strategy
Medline	<p>("probiotics" [MeSH] OR "probiotics" [TIAB] OR "probiotic" [TIAB] OR "synbiotics" [MeSH] OR "synbiotics" [TIAB] OR "synbiotic" [TIAB] OR "prebiotics" [MeSH] OR "prebiotics" [TIAB] OR "prebiotic" [TIAB] OR "symbiotics" [TIAB] OR "symbiotic" [TIAB] OR "psychobiotics" [TIAB] OR "psychobiotic" [TIAB] OR "fermented foods" [MeSH] OR "fermented beverages" [MeSH] OR "fermented" [TIAB] OR "lactobacillus" [MeSH] OR "lactobacillus" [TIAB] OR "bifidobacterium" [MeSH] OR "bifidobacterium" [TIAB] OR "saccharomyces" [MeSH] OR "saccharomyces" [TIAB] OR "streptococcus" [MeSH] OR "streptococcus" [TIAB] OR "lactococcus" [MeSH] OR "lactococcus" [TIAB] OR "enterococcus" [MeSH] OR "enterococcus" [TIAB] OR "pediococcus" [MeSH] OR "pediococcus" [TIAB] OR "bacillus" [MeSH] OR "bacillus" [TIAB] OR "leuconostoc" [MeSH] OR "leuconostoc" [TIAB] OR "escherichia" [MeSH] OR "escherichia" [TIAB]) AND ("brain-derived neurotrophic factor" [MeSH] OR "brain-derived neurotrophic factor" [TIAB] OR "brain derived neurotrophic factor" [TIAB] OR "BDNF" [TIAB])</p>
Scopus	<p>(TITLE-ABS-KEY ("probiotics") OR TITLE-ABS-KEY ("probiotic") OR TITLE-ABS-KEY ("synbiotics") OR TITLE-ABS-KEY ("synbiotic") OR TITLE-ABS-KEY ("prebiotics") OR TITLE-ABS-KEY ("prebiotic") OR TITLE-ABS-KEY ("symbiotics") OR TITLE-ABS-KEY ("symbiotic") OR TITLE-ABS-KEY ("psychobiotics") OR TITLE-ABS-KEY ("psychobiotic") OR TITLE-ABS-KEY ("fermented") OR TITLE-ABS-KEY ("lactobacillus") OR TITLE-ABS-KEY ("bifidobacterium") OR TITLE-ABS-KEY ("saccharomyces") OR TITLE-ABS-KEY ("streptococcus") OR TITLE-ABS-KEY ("lactococcus") OR TITLE-ABS-KEY ("enterococcus") OR TITLE-ABS-KEY ("pediococcus") OR TITLE-ABS-KEY ("bacillus") OR TITLE-ABS-KEY ("leuconostoc") OR TITLE-ABS-KEY ("escherichia")) AND (TITLE-ABS-KEY ("brain-derived neurotrophic factor") OR TITLE-ABS-KEY ("brain derived neurotrophic factor") OR TITLE-ABS-KEY ("BDNF"))</p>
Web of Science	<p>(TS=("probiotics") OR TS=("probiotic") OR TS=("synbiotics") OR TS=("synbiotic") OR TS=("prebiotics") OR TS=("prebiotic") OR TS=("symbiotics") OR TS=("symbiotic") OR TS=("psychobiotics") OR TS=("psychobiotic") OR TS=("fermented") OR TS=("lactobacillus") OR TS=("bifidobacterium") OR TS=("saccharomyces") OR TS=("streptococcus") OR TS=("lactococcus") OR TS=("enterococcus") OR TS=("pediococcus") OR TS=("bacillus") OR TS=("leuconostoc") OR TS=("escherichia")) AND (TS=("brain-derived neurotrophic factor") OR</p>

	TS=("brain derived neurotrophic factor") OR TS=("BDNF"))
Cochrane Library	("probiotics" OR "probiotic" OR "synbiotics" OR "synbiotic" OR "prebiotics" OR "prebiotic" OR "symbiotics" OR "symbiotic" OR "psychobiotics" OR "psychobiotic" OR "fermented" OR "lactobacillus" OR "bifidobacterium" OR "saccharomyces" OR "streptococcus" OR "lactococcus" OR "enterococcus" OR "pediococcus" OR "bacillus" OR "leuconostoc" OR "escherichia") AND ("brain-derived neurotrophic factor" OR "brain derived neurotrophic factor" OR "BDNF")
Google Scholar	allintitle: ("probiotics" OR "probiotic" OR "synbiotics" OR "synbiotic" OR "prebiotics" OR "prebiotic" OR "symbiotics" OR "symbiotic" OR "psychobiotics" OR "psychobiotic" OR "fermented" OR "lactobacillus" OR "bifidobacterium" OR "saccharomyces" OR "streptococcus" OR "lactococcus" OR "enterococcus" OR "pediococcus" OR "bacillus" OR "leuconostoc" OR "escherichia") AND ("brain-derived neurotrophic factor" OR "brain derived neurotrophic factor" OR "BDNF")

Supplementary Table 3. Certainty assessment using the GRADE approach.

Certainty assessment							Certainty
Nº of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	
BDNF							
10	Randomized controlled trials	Not serious	Serious ^a	Serious ^b	Not serious	None	⊕⊕○○ Low

Explanations:

^a High heterogeneity across studies (variation in the size of the effects).

^b Indirectness due to different target populations and administration forms.