

Appendix S1 Details of searching strategy and screening process

Searching strategy for RCTs

PubMed

Search strategy : (("Multiple Sclerosis"[MeSH Terms] OR (((("sclerosis multiple"[Title/Abstract] OR "sclerosis disseminated"[Title/Abstract]) OR (((((((("disseminate"[All Fields] OR "Disseminated"[All Fields]) OR "disseminates"[All Fields]) OR "disseminating"[All Fields]) OR "dissemination"[All Fields]) OR "disseminations"[All Fields]) OR "disseminator"[All Fields]) OR "disseminators"[All Fields]) AND "Sclerosi"[Title/Abstract])) OR (((("ms"[Journal] OR "med sci paris"[Journal]) OR "ms"[All Fields]) AND ((("Multiple Sclerosis"[MeSH Terms] OR ("Multiple"[All Fields] AND "Sclerosis"[All Fields])) OR "Multiple Sclerosis"[All Fields]))) OR "multiple sclerosis acute fulminating"[Title/Abstract])) AND (((((((("Probiotics"[Title/Abstract] OR "cultured milk products"[Title/Abstract]) OR "Yogurt"[Title/Abstract]) OR "yeast dried"[Title/Abstract]) OR "Yeasts"[Title/Abstract]) OR "Bifidobacterium"[Title/Abstract]) OR "Lactobacillus"[Title/Abstract]) OR "Synbiotics"[Title/Abstract]) OR "probiotic"[Title/Abstract]) OR "fermented product"[Title/Abstract]) OR "fermented dairy product"[Title/Abstract])) AND ((("randomized controlled trial"[Publication Type] OR "randomized"[Title/Abstract]) OR "placebo"[Title/Abstract]))

Search results : 9 items

Web of Science

Search strategy:

Set	Results	Search history
# 4	29	#3 AND #2 AND #1
# 3	828,541	TS = (random* controlled trial OR randomi* controlled trial OR placebo)
# 2	577,436	TS=('probiotic agent'/exp OR 'probiotic' OR 'probiotic agent' OR 'probiotics' OR 'yeast'/exp OR 'flora, yeast' OR 'fungi, yeast' OR 'yeast' OR 'yeast fermentation' OR 'yeast flora' OR 'yeast fungus' OR 'yeast germination' OR 'yeast metabolism' OR 'yeasts' OR 'yoghurt'/exp OR 'yoghourt' OR 'yoghurt' OR 'yogurt' OR 'zabadi' OR 'lactobacillus'/exp OR 'betabacterium' OR 'lactobacilleae' OR 'lactobacilleae' OR 'lactobacillus' OR 'lactobacteria' OR 'lactobacilli' OR 'bifidobacterium'/exp OR 'bifidobacterium' OR 'fermented dairy product'/exp OR 'cultured dairy foods' OR 'cultured dairy product' OR 'cultured milk foods' OR 'cultured milk product' OR 'cultured milk products' OR 'fermented dairy foods' OR 'fermented dairy product' OR 'fermented milk' OR 'fermented milk product' OR 'fermented product'/exp OR 'fermented food' OR 'fermented foods' OR 'fermented product' OR 'synbiotic agent'/exp OR 'synbiotic' OR 'synbiotic agent' OR 'synbiotics' OR probiotic*)
#1	159,238	TS=(Multiple Sclerosi* OR Sclerosi*, Multiple OR Sclerosi*, Disseminated OR Disseminated Sclerosi* OR MS (Multiple

		Sclerosi*) OR Multiple Sclerosi*, Acute Fulminating)
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Search results : 29 items

Cochrane library

Search strategy:

ID	Search	Hits
#1	MeSH descriptor: [Multiple Sclerosis] explode all trees	3396
#2	(Sclerosis, Multiple):ti,ab,kw OR (Sclerosis, Disseminated):ti,ab,kw OR (Disseminated Sclerosis):ti,ab,kw OR (MS (Multiple Sclerosis)):ti,ab,kw OR (Multiple Sclerosis, Acute Fulminating):ti,ab,kw (Word variations have been searched)	9983
#3	#1 or #2	9983
#4	MeSH descriptor: [Probiotics] explode all trees	1978
#5	(Cultured Milk Products):ti,ab,kw OR (Yogurt):ti,ab,kw OR (Yeast, Dried):ti,ab,kw OR (Yeasts):ti,ab,kw OR (Bifidobacterium):ti,ab,kw OR (Lactobacillus):ti,ab,kw OR (Synbiotics):ti,ab,kw OR (probiotic):ti,ab,kw OR (fermented product):ti,ab,kw OR (fermented dairy product):ti,ab,kw	9026
#6	#4 or #5	9171
#7	#3 AND #6	21

Search results : 21 items

Embase

Search strategy:

No.	Query Results	Results
#1	'multiple sclerosis'/exp	133,689
#2	'sclerosis, multiple':ti,ab	281
#3	'sclerosis, disseminated':ti,ab	11
#4	'disseminated sclerosis':ti,ab	615
#5	'ms (multiple sclerosis)':ti,ab	84
#6	'multiple sclerosis, acute fulminating':ti,ab	3
#7	#1 OR #2 OR #3 OR #4 OR #5 OR #6	133,852
#8	'probiotic agent'/exp	37,102
#9	'probiotics':ti,ab	20,030
#10	'cultured milk products':ti,ab	12
#11	'yogurt':ti,ab	3,852
#12	'dried yeast':ti,ab	158
#13	'yeast':ti,ab	195,067
#14	'bifidobacterium':ti,ab	10,255
#15	'lactobacillus':ti,ab	36,617

#16	'synbiotic agent'/exp	1808
#17	'fermented product':ti,ab	302
#18	'fermented dairy product':ti,ab	97
#19	#8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18	264,986
#20	'random':ti,ab OR 'placebo':ti,ab OR 'double-blind':ti,ab	697,551
#21	#7 AND #19 AND #20	9

Search results : 9 items

ClinicalTrials

Search strategy:

Condition or disease: multiple sclerosis

Intervention/treatment: probiotics

Search results : 1 item

Title:	Prebiotic vs Probiotic in Multiple Sclerosis
Status:	Recruiting
Study Results:	No Results Available
Conditions:	Multiple Sclerosis/Clinically Isolated Syndrome (CIS)
Interventions:	Dietary Supplement: Prebiotics (Prebiotin Prebiotic Fiber Stick Pac) Dietary Supplement: Probiotics (Visbiome®)
Locations:	Columbia University Medical Center, New York, New York, United States University of Pittsburg, Pittsburgh, Pennsylvania, United States

Searching strategy for preclinical studies

Pubmed

(((((Multiple Sclerosis[Title/Abstract]) OR (MS[Title/Abstract])) OR (Experimental Autoimmune Encephalomyelitis [Title/Abstract])) OR (EAE[Title/Abstract])) OR (Auto-Immune Disease[Title/Abstract])) OR (Autoimmune Disorder[Title/Abstract])) AND ((((((Lactobacillus[Title/Abstract]) OR (Lactobacillales[Title/Abstract])) OR (Probiotics[Title/Abstract] OR Lactobacilli[Title/Abstract])) OR (Lactic Acid Bacteria[Title/Abstract])) OR (Probiotic[Title/Abstract])) OR (Bifidobacteria[Title/Abstract])) OR (Bifidobacterium[Title/Abstract])) AND (((((Rat[Title/Abstract]) OR (mouse[Title/Abstract])) OR (mice[Title/Abstract])) OR (murine[Title/Abstract])) OR (rodent[Title/Abstract]))

Search results : 124 items

Google Scholar

intitle:("Multiple Sclerosis" OR "experimental autoimmune encephalomyelitis" OR "auto-immune disease") AND intitle:("probiotic" OR "lactobacillus" OR "bifidobacteria") AND ("Rat" OR "mouse" OR "mice")

Search results : 5,370 items

Web of Science

Set	Results	Search history
# 4	520	#3 AND #2 AND #1
# 3	4,983,912	TS=(Rat OR mouse OR mice OR murine)
# 2	216,375	TS=(Lactobacillu* or Lactobacillale* or Probiotic* or Lactobacilli or "Lactic Acid Bacteria" or Probiotic or Bifidobacteria or Bifidobacterium)
#1	873,272	TS=("Multiple Sclerosis" or "MS" or "experimental autoimmune encephalomyelitis" or "EAE" or "auto-immune disease" or "autoimmune disorder")

Search results : 520 items