

Supplementary note 1: Example search strategy for MEDLINE (Ovid)

1. Nut.mp
2. Nuts.mp
3. Almond.mp
4. Prunus dulcis.mp
5. Brazil nut.mp
6. Bertholletia.mp
7. Cashew.mp
8. Anacardium.mp
9. Chestnut.mp
10. Castanea.mp
11. Hazelnut.mp
12. Corylus.mp
13. Macadamia.mp
14. Marking nut.mp
15. Semecarpus anacardium.mp
16. Pecan.mp
17. Carya.mp
18. Pine nut.mp
19. Pinus.mp
20. Pistachio.mp
21. Pistachia.mp
22. Sachi inchi nut.mp
23. Plukenetia volubilis.mp
24. Walnut.mp
25. Juglans.mp
26. Ground nut.mp
27. Bambara groundnut.mp
28. Vigna subterranean.mp
29. Kersting's nut.mp
30. Macrotyloma geocarpum.mp
31. Peanut.mp
32. Arachis.mp
33. exp Nuts/
34. exp Prunus/ or exp Prunus dulcis/
35. exp Bertholletia/
36. exp Anacardium/
37. exp Corylus/
38. exp Macadamia/
39. exp Semecarpus/
40. exp Carya/
41. exp Pinus/
42. exp Pistachia/
43. exp Juglans/
44. exp Arachis/
45. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44
46. Gut microbiome.mp
47. Gut microbiota.mp

48. Gut bacteria.mp
49. Gut flora.mp
50. Short-chain fatty acids.mp
51. SCFA.mp
52. Acetate.mp
53. Proprionate.mp
54. Butyrate.mp
55. Stool pH.mp
56. Gut transit.mp
57. Gut transit time.mp
58. Transit time.mp
59. Stool frequency.mp
60. Stool consistency.mp
61. Stool weight.mp
62. Gut symptoms.mp
63. exp Gastrointestinal microbiome/
64. exp Microbiota/
65. exp Fatty acids, Volatile/
66. exp Acetates/
67. exp Butyrates/
68. exp Feces/
69. exp Gastrointestinal Transit/
70. exp Gastrointestinal Motility/
71. exp Constipation/
72. exp Diarrhea/
73. exp Irritable Bowel Syndrome/
74. 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62
or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73
75. 45 AND 74
76. exp animals/ not humans.sh
77. 75 NOT 76

Supplementary Table 1: Sensitivity analyses

Sensitivity analyses for outcomes where significant heterogeneity was observed, or where the meta-analysis was significant.

Table S1. Results of sensitivity analyses for characteristics influencing the effect of nut consumption on gut microbiota composition and diversity in adults¹.

Subgroup	No. of studies (ref)	Results			Heterogeneity		
		Participants <i>n</i>	Meta-analysis overall estimate (95% CI)	<i>P</i>	Chi-square test	<i>P</i>	<i>I</i> ² (%)
p_Proteobacteria							
Almond	3 [18,19,21]	120	-0.20 (-0.66, 0.25)	0.38	9.91	0.08	50
Duration < 4 weeks							
Dose < 45 g/d	3 [17-19]	65	-0.20 (-0.67, 0.28)	0.42	9.41	0.09	47
Crossover design							
g_Clostridium							
Almond	2 [19,21]	91	0.34 (-0.01, 0.68)	0.06	0.18	1	0
Duration < 4 weeks							
Dose < 45 g/d	2 [17,19]	36	0.47 (0.06, 0.88)	0.03	0.63	0.96	0
Crossover design							
g_Dialister							
Almond	2 [19,21]	91	0.44 (0.09, 0.79)	0.01	1.33	0.86	0
Duration < 4 weeks							
Dose < 45 g/d	2 [17,19]	36	0.33 (-0.08, 0.74)	0.12	0.66	0.96	0
Crossover design							
g_Lachnospira							
Almond	2 [19,21]	91	0.39 (0.04, 0.74)	0.03	0.61	0.96	0
Duration < 4 weeks							
Dose < 45 g/d	2 [17,19]	36	0.30 (-0.11, 0.71)	0.15	1.05	0.90	0
Crossover design							
g_Parabacteroides							
Almond	2 [19,21]	91	-0.43 (-0.77, -0.08)	0.02	0.19	1	0

Duration < 4 weeks								
Dose < 45 g/d	2 [17,19]	36	-0.20 (-0.61, 0.21)	0.35	1.48	0.83	0	
Crossover design								
g_Roseburia								
Non-clinical participants	3 [17,19,21]	109	0.24 (-0.06, 0.55)	0.12	2.84	0.72	0	
Almond	2 [19,21]	91	0.19 (-0.16, 0.53)	0.29	2.39	0.66	0	
Walnut	2 [17,27]	60	0.58 (0.19, 0.97)	0.004	0.26	0.61	0	
Duration < 4 weeks								
Dose < 45 g/d	2 [17,19]	36	0.43 (0.02, 0.84)	0.04	1.05	0.9	0	
Duration > 4 weeks								
Dose > 45 g/d	2 [21,27]	115	0.33 (-0.31, 0.96)	0.31	3.58	0.06	72	
Crossover design	3[17,19,27]	78	0.52 (0.21, 0.84)	0.001	1.53	0.91	0	
g_Bifidobacteria								
Almond	2 [19,21]	91	-0.28 (-0.62, 0.07)	0.11	0.28	0.99	0	
Walnut	2 [16,17]	160	0.07 (-0.53, 0.66)	0.83	3.10	0.08	68	
Duration < 4 weeks	2 [17,19]	36	-0.35 (-0.76, 0.06)	0.09	0.10	1	0	
Duration > 4 weeks	2 [16,21]	215	0.09 (-0.41, 0.58)	0.74	3.77	0.05	74	
Dose < 45 g/d	3 [16,17,19]	178	-0.07 (-0.43, 0.28)	0.69	7.44	0.19	33	
Crossover design								
g_Anaerostipes								
Walnut	2 [16,17]	160	-0.15 (-0.61, 0.30)	0.51	2	0.16	50	
Dose < 45 g/d								
Crossover design								
Duration > 4 weeks	2 [16,21]	215	0.06 (-0.71, 0.83)	0.88	8.84	0.003	89	
Alpha Diversity – Shannons index								
Almond	2 [18,21]	102	0.35 (0.00, 0.70)	0.05	0.70	0.40	0	
Duration > 4 weeks	2 [16,21]	215	0.15 (-0.42, 0.72)	0.60	4.89	0.03	80	
Dose < 45 g/d	2 [16,18]	171	-0.05 (-0.27, 0.17)	0.63	1.02	0.31	2	
Crossover design								

¹Data were meta-analysed using a random-effects model and are presented as standardised mean difference. g/d, grams per day.