

Supplementary Material 3: List of enrolled studies

1. Pozzoni P, Riva A, Bellatorre AG, *et al.* *Saccharomyces boulardii* for the prevention of antibiotic-associated diarrhea in adult hospitalized patients: a single-center, randomized, double-blind, placebo-controlled trial. *Am J Gastroenterol* 2012;107:922-31.
2. Dietrich CG, Kottmann T and Alavi M. Commercially available probiotic drinks containing *Lactobacillus casei* DN-114001 reduce antibiotic-associated diarrhea. *World J Gastroenterol* 2014;20:15837-44.
3. Lonnermark E, Friman V, Lappas G, *et al.* Intake of *Lactobacillus plantarum* reduces certain gastrointestinal symptoms during treatment with antibiotics. *J Clin Gastroenterol* 2010;44:106-12.
4. Allen SJ, Wareham K, Wang D, *et al.* *Lactobacilli* and *bifidobacteria* in the prevention of antibiotic-associated diarrhoea and *Clostridium difficile* diarrhoea in older inpatients (PLACIDE): a randomised, double-blind, placebo-controlled, multicentre trial. *Lancet* 2013;382:1249-57.
5. Cimperman L, Bayless G, Best K, *et al.* A randomized, double-blind, placebo-controlled pilot study of *Lactobacillus reuteri* ATCC 55730 for the prevention of antibiotic-associated diarrhea in hospitalized adults. *J Clin Gastroenterol* 2011;45:785-9.
6. Song HJ, Kim JY, Jung SA, *et al.* Effect of probiotic *Lactobacillus* (Lacidofil® Cap) for the prevention of antibiotic-associated diarrhea: a prospective, randomized, double-blind, multicenter study. *J Korean Med Sci* 2010;25:1784-91.
7. Fox MJ, Ahuja KDK, Robertson IK, *et al.* Can probiotic yogurt prevent diarrhoea in children on antibiotics? A double-blind, randomised, placebo-controlled study. *BMJ Open* 2015;5:e006474.

8. Gao XW, Mubasher M, Fang CY, *et al.* Dose-Response Efficacy of a Proprietary Probiotic Formula of *Lactobacillus acidophilus* CL1285 and *Lactobacillus casei* LBC80R for Antibiotic-Associated Diarrhea and *Clostridium difficile*-Associated Diarrhea Prophylaxis in Adult Patients. *Am J Gastroenterol* 2010;105:1636-1641.
9. Sampalis J, Psaradellis E and Rampakakis E. Efficacy of BIO K + CL1285® in the reduction of antibiotic-associated diarrhea—a placebo controlled double-blind randomized, multi-center study. *Arch Med Sci* 2010;6:56-64.
10. Ahmad K, Fatemeh F, Mehri N, *et al.* Probiotics for the treatment of pediatric *Helicobacter pylori* infection: a randomized double blind clinical trial. *Iran J Pediatr* 2013;23:79-84.
11. Armuzzi A, Cremonini F, Bartolozzi F, *et al.* The effect of oral administration of *Lactobacillus* GG on antibiotic-associated gastrointestinal side-effects during *Helicobacter pylori* eradication therapy. *Aliment Pharmacol Ther* 2001;15:163-9.
12. Arvola T, Laiho K, Torkkeli S, *et al.* Prophylactic *Lactobacillus* GG reduces antibiotic-associated diarrhea in children with respiratory infections: a randomized study. *Pediatrics* 1999;104:e64.
13. Beausoleil M, Fortier N, Guenette S, *et al.* Effect of a fermented milk combining *Lactobacillus acidophilus* Cl1285 and *Lactobacillus casei* in the prevention of antibiotic-associated diarrhea: a randomized, double-blind, placebo-controlled trial. *Can J Gastroenterol* 2007;21:732-6.
14. Bravo MV, Bunout B, Leiva L, *et al.* Effect of probiotic *Saccharomyces boulardii* on prevention of antibiotic-associated diarrhea in adult outpatients with amoxicillin treatment. *Rev Méd Chile* 2008;136:981-988.
15. Can M, Besirbellioglu BA, Avci IY, *et al.* Prophylactic *Saccharomyces boulardii* in the prevention of antibiotic-associated diarrhea: a prospective study. *Med Sci Monit*

2006;12:PI19-22.

16. Cindoruk M, Erkan G, Karakan T, *et al*. Efficacy and Safety of *Saccharomyces boulardii* in the 14-day Triple Anti-*Helicobacter pylori* Therapy: A Prospective Randomized Placebo-Controlled Double-Blind Study. *Helicobacter* 2007;12:309-316.
17. Conway S, Hart A, Clark A, *et al*. Does eating yogurt prevent antibiotic-associated diarrhoea? A placebo-controlled randomised controlled trial in general practice. *Br J Gen Pract* 2007, 57:953-9.
18. Correa NBO, Filho LAPF, Penna FJ, *et al*. A randomized formula controlled trial of *Bifidobacterium lactis* and *Streptococcus thermophilus* for prevention of antibiotic-associated diarrhea in infants. *J Clin Gastroenterol* 2005;39:385-9.
19. Cremonini F, Caro SDC, Covino M, *et al*. Effect of different probiotic preparations on anti-*Helicobacter pylori* therapy-related side effects: a parallel group, triple blind, placebo-controlled study. *Am J Gastroenterol* 2002;97:2744-9.
20. de Vrese M, Kristen H, Rautenberg P, *et al*. Probiotic lactobacilli and bifidobacteria in a fermented milk product with added fruit preparation reduce antibiotic associated diarrhea and *Helicobacter pylori* activity. *Journal of Dairy Research* 2011;78:396-403.
21. Duman DG, Bor S, Ozutemiz O, *et al*. Efficacy and safety of *Saccharomyces boulardii* in prevention of antibiotic-associated diarrhoea due to *Helicobacter pylori* eradication. *Eur J Gastroenterol Hepatol* 2005;17:1357-61.
22. Engelbrektson A, Korzenik JR, Pittler A, *et al*. Probiotics to minimize the disruption of faecal microbiota in healthy subjects undergoing antibiotic therapy. *Journal of Medical Microbiology* 2009;58:663-670.
23. Erdeve O, Tiras U and Dallar Y. The probiotic effect of *Saccharomyces boulardii* in a pediatric

- age group. *J Trop Pediatr* 2004;50:234-6.
24. Hickson M, Souza ALD, Muthu N, *et al.* Use of probiotic *Lactobacillus* preparation to prevent diarrhoea associated with antibiotics: randomised double blind placebo controlled trial. *BMJ* 2007;335:80.
 25. Hurduc V, Plesca D, Dragomir D, *et al.* A randomized, open trial evaluating the effect of *Saccharomyces boulardii* on the eradication rate of *Helicobacter pylori* infection in children. *Acta Paediatr* 2009;98:127-31.
 26. Kim MN, Kim N, Lee SH, *et al.* The Effects of Probiotics on PPI-Triple Therapy for *Helicobacter pylori* Eradication. *Helicobacter* 2008;13:261-268.
 27. Koning CJM, Jonkers D, Stobberingh EE, *et al.* The effect of a multispecies probiotic on the intestinal microbiota and bowel movements in healthy volunteers taking the antibiotic amoxycillin. *Am J Gastroenterol* 2008;103:178-89.
 28. Koning CJM, Jonkers D, Smidt H, *et al.* The effect of a multispecies probiotic on the composition of the faecal microbiota and bowel habits in chronic obstructive pulmonary disease patients treated with antibiotics. *Br J Nutr* 2010;103:1452-60.
 29. Kotowska M, Albrecht P and Szajewska H. *Saccharomyces boulardii* in the prevention of antibiotic-associated diarrhoea in children: a randomized double-blind placebo-controlled trial. *Aliment Pharmacol Ther*, 2005;21:583-90.
 30. Lionett E, Miniello VL, Castellaneta SP, *et al.* *Lactobacillus reuteri* therapy to reduce side-effects during anti-*Helicobacter pylori* treatment in children: a randomized placebo controlled trial. *Aliment Pharmacol Ther* 2006;24:1461-1468.
 31. Merenstein DJ, Foster J and D'Amico F. A randomized clinical trial measuring the influence of kefir on antibiotic-associated diarrhea: the measuring the influence of Kefir (MILK) Study.

- Arch Pediatr Adolesc Med 2009;163:750-4.
32. Morrow LE, Kollef MH and Casale TB. Probiotic prophylaxis of ventilator-associated pneumonia: a blinded, randomized, controlled trial. Am J Respir Crit Care Med 2010;182:1058-64.
 33. Myllyluoma E, Veijola L, Ahlroos T, *et al*. Probiotic supplementation improves tolerance to *Helicobacter pylori* eradication therapy—a placebo-controlled, double-blind randomized pilot study. Aliment Pharmacol Ther 2005;21:1263-72.
 34. Nista EC, Candelli M, Cremonini F, *et al*. *Bacillus clausii* therapy to reduce side-effects of anti-*Helicobacter pylori* treatment: randomized, double-blind, placebo controlled trial. Aliment Pharmacol Ther 2004;20:1181-8.
 35. Ouwehand AC, DingLian C, Weijian X, *et al*. Probiotics reduce symptoms of antibiotic use in a hospital setting: a randomized dose response study. Vaccine 2014;32:458-63.
 36. Plummer S, Weaver MA, Harris JC, *et al*. *Clostridium difficile* pilot study: effects of probiotic supplementation on the incidence of *C. difficile* diarrhoea. Int Microbiol 2004;7:59-62.
 37. Ruszczynski M, Radzikowski A and Szajewska H. Clinical trial: effectiveness of *Lactobacillus rhamnosus* (strains E/N, Oxy and Pen) in the prevention of antibiotic-associated diarrhoea in children. Aliment Pharmacol Ther 2008;28:154-61.
 38. Safdar N, Barigala R, Said A, *et al*. Feasibility and tolerability of probiotics for prevention of antibiotic-associated diarrhoea in hospitalized US military veterans. J Clin Pharm Ther 2008;33:663-8.
 39. Shan LS, Hou P, Wang ZJ, *et al*. Prevention and treatment of diarrhoea with *Saccharomyces boulardii* in children with acute lower respiratory tract infections. Benef Microbes 2013;4:329-34.

40. Sheu BS, Wu JJ, LO CY, *et al.* Impact of supplement with *Lactobacillus*- and *Bifidobacterium*-containing yogurt on triple therapy for *Helicobacter pylori* eradication. *Aliment Pharmacol Ther* 2002;16:1669-75.
41. Souza DN and Jorge MT. The effect of *Lactobacillus casei* and *Bifidobacterium breve* on antibiotic-associated diarrhea treatment: randomized double-blind clinical trial. *Rev Soc Bras Med Trop* 2012;45:112-6.
42. Sullivan Åsa, Barkholt L and Nord CE. *Lactobacillus acidophilus*, *Bifidobacterium lactis* and *Lactobacillus* F19 prevent antibiotic-associated ecological disturbances of *Bacteroides fragilis* in the intestine. *Journal of Antimicrobial Chemotherapy* 2003;52:308-311.
43. Sykora J, Valeckova K, Amlerova J, *et al.* Effects of a specially designed fermented milk product containing probiotic *Lactobacillus casei* DN-114 001 and the eradication of *H. pylori* in children: a prospective randomized double-blind study. *J Clin Gastroenterol* 2005;39:692-8.
44. Szajewska H, Albrecht P and Topczewska-Cabanek A. Randomized, double-blind, placebo-controlled trial: effect of *Lactobacillus GG* supplementation on *Helicobacter pylori* eradication rates and side effects during treatment in children. *J Pediatr Gastroenterol Nutr* 2009;48:431-6.
45. Szymanski H, Armanska M, Kowalska-Dupлага K, *et al.* *Bifidobacterium longum* PL03, *Lactobacillus rhamnosus* KL53A, and *Lactobacillus plantarum* PL02 in the prevention of antibiotic-associated diarrhea in children: a randomized controlled pilot trial. *Digestion* 2008;78:13-7.
46. Thomas MR, Litin SC, Osmon DR, *et al.* Lack of effect of *Lactobacillus GG* on antibiotic-associated diarrhea: a randomized, placebo-controlled trial. *Mayo Clin Proc* 2001;76:883-9.

47. Tursi A, Brandimarte G, Giorgetti GM, *et al*. Effect of *Lactobacillus casei* supplementation on the effectiveness and tolerability of a new second-line 10-day quadruple therapy after failure of a first attempt to cure *Helicobacter pylori* infection. *Med Sci Monit* 2004;10:CR662-666.
48. Vanderhoof JA, Whitney DB, Antonson DL, *et al*. *Lactobacillus* GG in the prevention of antibiotic-associated diarrhea in children. *J Pediatr* 1999;135:564-8.
49. Wenus C, Goll R, Loken EB, *et al*. Prevention of antibiotic-associated diarrhoea by a fermented probiotic milk drink. *Eur J Clin Nutr* 2008;62:299-301.
50. Yoon H, Kim N, Kim JY, *et al*. Effects of multistrain probiotic-containing yogurt on second-line triple therapy for *Helicobacter pylori* infection. *Journal of Gastroenterology and Hepatology* 2011;26:44-48.
51. Zheng YJ. Multicenter, randomized, controlled clinical trial on preventing antibiotic-associated diarrhea in children with pneumonia using the live *Clostridium butyricum* and *Bifidobacterium* combined Powder. *Chin J Pediatr* 2012;50:732-6.