Evidence Update

Other Infectious Diseases Series

Are probiotics effective for treating infectious diarrhoea?

Probiotics shorten the length of illness in people with acute infectious diarrhoea.

Inclusion criteria

Studies:

Randomized controlled trials.

Participants:

Adults and children with acute diarrhoea (duration less than 14 days) proven or presumed to be caused by an infectious agent.

Intervention:

Specific, identified probiotics compared with placebo or no probiotic.

Outcomes:

Diarrhoea lasting 3 or more days and 4 or more days; duration of diarrhoea; stool frequency and volume; adverse events including withdrawal from trial.

Results

- 23 trials included, involving 1449 infants or children and 352 adults, mainly in countries with low mortality. Five trials were adequately concealed.
- Probiotics reduced diarrhoea at 3 days (relative risk 0.66, 95% confidence interval 0.55 to 0.77; 15 trials) and at 4 days (relative risk 0.31, 95% confidence interval 0.19 to 0.50; 13 trials).
- Diarrhoea episodes were shorter with probiotics on average by 30.48 hours (95% confidence interval 18.51 to 42.46 hours; 12 trials).
- No adverse events were attributed to probiotics in the 12 trials examining this.







Adapted from Allen SJ, Okoko B, Martinez E, Gregorio G, Dans LF. Probiotics for treating infectious diarrhoea. *Cochrane Database of Systematic Reviews* 2003, Issue 4. Art. No.: CD003048. DOI: 10.1002/14651858.CD003048.pub2. *Evidence Update* published in February 2007.

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Probiotics versus control: mean duration of diarrhoea in hours

Study	Probiotic N	Mean (S	6D) p	No probiotic N	Mean	(SD)	Weighted Mean Difference (Random) 95% Cl	Weight (%)	Weighted Mean Differen (Random) 95% CI
)1 Live Lactobacillus casei	strain GG	F0.00 //	22 003	1.40	71.00			40.0	10.00 / 01.00 0 10.1
Guandalini 2000	147	58.3U (J	27.6D)	140	71.90	(35.8U)		10.6	-13.6D [-21.D2, -6.18]
Guarino 1997	52	76.8D (34.61)	48	141.60	(33.26)		9.7	-64.80 [-78.11, -51.49]
Isolauri 1994	21	36100 ((16.80)	21	55.20	(19.20)		10.1	-19.20 [-30.11, -8.29]
Pant 1996	14	45.60 ((14.40)	12	79.20	(55.20)		6.2	-33.60 [-65.73, -1.47]
Shomikova 1997a	59	64.80 (52.80)	64	91.20	(67.20)		8.2	-26.40 [-47.67, -5.13]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-2.99 p	293 Jare=44.78 df=4 0=0.003	⊧p<0.00001		285				58.1	-31.18 [-51.62, -10.75]
)2 Live Lactobacillus reuter	·i								
Shomikova 1997b	21	36 DD (3	26.40)	25	60.00	(36.00)		8.8	-24.00 [-42.07, -5.93]
Shomikova 1997c	19	40.80 (38.40)	21	69.60	(55.20)		6.7	-28.80 [-58.05, 0.45]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-3.23 p	40 are=0.07 df=1 =0.001	p=0.7844		46				7.0	-25.33 [-40.70, -9.95]
)3 Live Lactobacillus casei									
Sugita 1994	16	91.20 (3	36.00)	11	127.20	(40.80)		6.6	-36.00 [-65.88, -6.12]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-2.36 p	16 Jare=0.00 df=0 0=0.02			11			* * * * * * *	1.8	-36.00 [-65.88, -6.12]
)4 Live Lactobacillus rhamr	nosus and Lac	tobadillus r	reuteri						
Rosenfeldt 2002a	30	81.50 (3	37.30)	39	101.10	(47.60)	2 	8.4	-19.60 [-39.63, 0.43]
Rosenfeldt 2002b	24	75.90 (39.70)	19	115.70	(85.00)	6	4.8	-39.80 [-81.19, 1.59]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-2.55 p	54 are=0.74 df=1 =0.01	p=0.3892		58				5.1	-23.43 [-41.47, -5.40]
05 Live Lactobacillus acido	philus and La	ctobacillus I	bifidus						
Oandasan 1999	47	42.89 (3	21.77)	47	93.96	(22.85)	-	10.4	-51.07 [-60.09, -42.05]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-11.09	47 iare=0.00 df=0 p<0.00001			47			•	20.2	-51.07 [-60.09, -42.05]
06 Killed Lactobacillus acid	lophilus LB st	rain					121		
Simakachom 2000	37	43.40 (2	25.90)	36	57.00	(36.30)		9.5	-13.60 [-28.10, 0.90]
Subtotal (95% CI) Test for heterogeneity chi-squ Test for overall effect=-1.84 p	37 Jare=0.00 df=0 5=0.07			36			-	7.8	-13.60 [-28.10, 0.90]
Total (95% CI)	487 Jare=76.51 df=1	1 p<0.00001		483			-	100.0	-30.48 [-42.46, -18.51]

Authors' conclusions

Implications for practice:

Probiotics have modest effects in reducing the duration of an episode of diarrhoea. There are little data on specific probiotic regimens in different groups of patients.

Implications for research:

Randomized controlled trials using specific probiotic regimens in well-defined patient groups are needed. Trials should also evaluate specific probiotic regimens in children with persistent diarrhoea and in diarrhoea associated with malnutrition in low-income countries.