

***Lactobacillus casei* Shirota: key studies**

Lactobacillus casei Shirota (LcS) is the unique probiotic strain in Yakult

For further information visit our website: www.yakult.co.uk/hcp
Contact the science team on science@yakult.co.uk or 0208 8427 600.

Last update 02 May 2017

Index

1. Infectious diarrhoea and antibiotic-associated diarrhoea
2. Other infections
3. Gut function (constipation, IBS, IBD, NEC, liver)
4. Metabolic risk factors (insulin resistance, blood pressure)
5. Cancer (colorectal, bladder, lung, breast)
6. Immune
7. Miscellaneous (safety, gut survival, enteral feed, sports, oral, reduction of harmful substances, etc)

1. Infectious diarrhoea and antibiotic-associated diarrhoea

Use of probiotics in preventing antibiotic-associated diarrhoea and *Clostridium difficile* associated diarrhoea in spinal injury centres: an international multicentre study. Wong S, Saif M, O'Driscoll J *et al* (2015) *International Journal of Probiotics Prebiotics* **10**(23):85-90.

A *Lactobacillus casei* Shirota probiotic drink reduces antibiotic-associated diarrhoea in patients with spinal cord injuries: a randomized controlled trial. Wong S, Jamous A, O'Driscoll J *et al* (2014) *British Journal of Nutrition* **111**(4):672-678.
[Reprint available on request] [PubMed]

Prevention of relapse following *Clostridium difficile* infection using probiotic *Lactobacillus casei* Shirota. Lee LYW, Golmohamad R, MacFaul G (2013) *International Journal of Probiotics & Prebiotics* **8**(4):145-148.
[Reprint available on request]

Effects of antibiotic therapy on the gastrointestinal microbiota and the influence of *Lactobacillus casei*. Pirker A, Stockenhuber A, Remely M *et al* (2013) *Food & Agricultural Immunology* **24**(3):315-330.
[Reprint available on request] [Abstract]

Effects of the continuous intake of *Lactobacillus casei* strain Shirota-fermented milk on risk management of long-term inpatients at health service facilities for the elderly. Bian L, Nagata S, Asahara T *et al* (2011) *International Journal of Probiotics and Prebiotics* **6**(2):123-132.
[Abstract]

Effect of the continuous intake of probiotic-fermented milk containing *Lactobacillus casei* strain Shirota on fever in a mass outbreak of norovirus gastroenteritis and the faecal microflora in a health service facility for the aged. Nagata S, Asahara T, Ohta T *et al* (2011) *British Journal of Nutrition* **106**(4):549-56
[PubMed]

Effects of perioperative synbiotic treatment on infectious complications, intestinal integrity and faecal flora and organic acids in hepatic surgery with or without cirrhosis. Usami M, Miyishi M, Kanbara Y *et al* (2011) *Journal of Parenteral and Enteral Nutrition* **15**:317-328.
[Free paper] [PubMed]

Role of probiotic in preventing acute diarrhoea in children: a community-based, randomized, double-blind placebo-controlled field trial in an urban slum. Sur D, Manna B, Niyogi SK, Ramamurthy T *et al* (2010) *Epidemiology and Infection* **139**(6):919-926.
[Reprint available on request] [PubMed]

The potential of probiotic fermented milk products in reducing risk of antibiotic-associated diarrhoea and *Clostridium difficile* disease. [Contains Weir UK hospital study] Lewis JN, Thomas LV & Weir W (2009) *International Journal of Dairy Technology* **62**(4):461-471.
[Free paper] [Abstract]

Resolution of cryptosporidiosis with probiotic treatment. Pickerd N & Tuthill D (2004) *Postgraduate Medical Journal* **80**:112-113.
[Free paper] [PubMed]

Clinical effect of biolactis powder, a *Lactobacillus casei* preparation, on rotavirus-induced pediatric enteritis. Sugita T & Togawa M (1994) *Japanese Journal of Pediatrics* **47**:2755-2762.

2. Other infections

Daily fermented milk with *Lactobacillus casei* strain Shirota reduces the incidence and duration of upper respiratory tract infections in healthy middle-aged office workers. Shida K, Sato T, liuzka R *et al* (2017) *European Journal of Nutrition* **56**(1): 45-53
[Free paper] [PubMed]

The effectiveness of *Lactobacillus* beverage in controlling infections among the residents of an aged care facility: a randomized placebo-controlled double-blind trial. Nagata S, Asahara T, Wang C, Suyama Y *et al* (2016) *Annals of Nutrition & Metabolism* **68**(1):51-59.
[PubMed]

Fermented milk containing *Lactobacillus casei* strain Shirota prevents the onset of physical symptoms in medical students under academic examination stress. Kato-Katoaka A, Nishida K, Takada M *et al* (2016) *Beneficial Microbes* **7**(2):153-156.
[PubMed]

Randomized study of the effect of synbiotics during neoadjuvant chemotherapy on adverse events in esophageal cancer patients. Motoori M, Yano M, Miyata H *et al* (2015) *Clinical Nutrition* **36**(1):93-99
[PubMed]

Effect of probiotic supplement on cytokine levels in HIV-infected individuals: a preliminary study. Falasca K, Vecchiet J, Ucciferri *et al* (2015) *Nutrients* **7**:8335-8347.
[Free paper] [PubMed]

Decreased duration of acute upper respiratory tract infections with daily intake of fermented milk: A multicentre, double-blinded, randomized comparative study in users of day care facilities for the elderly population. Fujita R, Iimuro S, Shinozaki T *et al* (2013) *American Journal of Infection Control* **41**(12):1231-1235.

[PubMed]

Yakult: a role in combating multi-drug resistant *Pseudomonas aeruginosa*? Thomson CH, Hassan I, Dunn K (2012) *Journal of Wound Care* **21**(11):566-569.

[Abstract]

Perioperative synbiotic treatment to prevent infectious complications in patients after elective living donor liver transplantation. A prospective randomised study. Eguchi S, Takatsuki M, Hidaka M *et al* (2010) *American Journal of Surgery* **201**(4):498-502.

[PubMed]

Daily probiotic's (*Lactobacillus casei* Shirota) reduction of infection incidence in athletes. Gleeson M, Bishop NC, Oliveira M, Tauler P (2011) *International Journal of Sport Nutrition & Exercise Metabolism* **21**:55-64.

[Reprint available on request] [PubMed]

Perioperative synbiotic treatment to prevent postoperative infectious complications in biliary cancer surgery: A randomized controlled trial. Sugawara G *et al* (2006) *Annals of Surgery* **244**(5):706-714.

[Reprint available on request] [Free paper]

Synbiotics reduce postoperative infectious complications: a randomized controlled trial in biliary cancer patients undergoing hepatectomy. Kanazawa H, Nagino M, Nishio H *et al* (2005) *Langenbeck's Arch Surgery* **390**(2): 104-113.

[PubMed]

***In vitro* and *in vivo* inhibition of *Helicobacter pylori* by *Lactobacillus casei* strain Shirota.** Sgouras D, Maragkoudakis P, Petraki K *et al* (2004) *Applied & Environmental Microbiology* **70**(1):518-26.

[Free paper] [PubMed]

A prospective uncontrolled trial of fermented milk drink containing viable *Lactobacillus casei* strain Shirota in the treatment of HTLV-1 associated myelopathy / tropical spastic paraparesis. Matsuzaki T, Saito M, Usuku K *et al* (2005) *Journal of the Neurological Sciences* **273**:75-81.

[PubMed]

Effect of frequent consumption of a *Lactobacillus casei*-containing milk drink in *Helicobacter pylori*-colonized subjects. Cats A, Kuipers EJ, Bosscherts MAR *et al* (2003) *Alimentary Pharmacology & Therapeutics* **17**(3):429-435.

[Free paper] [PubMed]

3. Gut function (e.g. IBS, constipation, IBD, NEC, liver)

Fermented milk containing *Lactobacillus casei* strain Shirota preserves the diversity of the gut microbiota and relieves abdominal dysfunction in healthy medical students exposed to academic stress. Kato-Katoaka A, Nishida K, Takada M *et al* (2016) *Applied and Environmental Microbiology* **82**(12):3649-58.

[PubMed]

The effectiveness of *Lactobacillus* beverage in controlling infections among the residents of an aged care facility: a randomized placebo-controlled double-blind trial. Nagata S, Asahara T, Wang C *et al* (2016) *Annals of Nutrition & Metabolism* **68**(1):51-59.

[PubMed]

Efficacy of *Lactobacillus casei* Shirota for patients with irritable bowel syndrome. Thijssen AY, Clemens CH, Vankerckhoven V *et al* (2015) *European Journal of Gastroenterology & Hepatology* **28**(1):8-14.

[PubMed]

Probiotic *Lactobacillus casei* Shirota improves kidney function, inflammation and bowel movements in hospitalized patients with acute gastroenteritis – A prospective study. Akoglu B, Loytved A, Nuiding H, *et al* (2015) *Journal of Functional Foods* **17**:305-313.

[Abstract]

Effect of fermented milk containing *Lactobacillus casei* strain Shirota on constipation-related symptoms and haemorrhoids in women during puerperium. Sakai T, Kubota H, Gawad A *et al* (2015) *Beneficial Microbes* **6**(3):253-262.

[PubMed]

Improving the bowel habits of elderly residents in a nursing home using probiotic fermented milk. Van den Nieuwboer M, Klomp-Hogeterp A, Verdoorn S *et al* (2015) *Beneficial Microbes* **6**(4):397-403.

[Free paper] [PubMed]

Maintenance of healthy intestinal microbiota in women who regularly consume probiotics. Tsuji H, Chonan O, Suyama Y *et al* (2014) *Int J Probiotics Prebiotics* **9**(1/2):31-38.

[Abstract]

A probiotic fermented milk drink containing *Lactobacillus casei* strain Shirota improves stool consistency of subjects with hard stools. Tilley L, Keppens K, Kushiro A *et al* (2014) *Int J Probiotics Prebiotics* **9**(1/2):23-30.

[Reprint available on request]

Beneficial effects of long-term consumption of a probiotic combination of *Lactobacillus casei* Shirota and *Bifidobacterium breve* Yakult may persist after suspension of therapy in lactose-intolerant patients. Almeida CC, Lorena SLS, Pavan CR *et al* (2012) *Nutrition in Clinical Practice* **27**(2):247-251.

[PubMed]

Successful treatment of primary sclerosing cholangitis with a steroid and a probiotic. Shimizu M, Iwasaki H, Mase S *et al* (2012) *Case Reports in Gastroenterology* **6**:249-253.

[Free paper] [PubMed]

Efficacy of *Bifidobacterium breve* and *Lactobacillus casei* oral supplementation on necrotizing enterocolitis in very-low-birth-weight preterm infants: a double-blind, randomized, controlled trial. Braga TD, da Silva GA, de Lira PIC *et al* (2011) *American Journal of Clinical Nutrition* **93**:81-86.

[Free paper] [PubMed]

Use of probiotics for the treatment of constipation in Parkinson's disease patients. Cassani E, Privitera G, Pezzoli G *et al* (2011) *Minerva Gastroenterologica e Dietologica* **57**:117-121.
[PubMed]

Efficacy of *Lactobacillus casei* treatment on small bowel injury in chronic low-dose aspirin users: a pilot randomized controlled study. Endo H, Higurashi T, Hoson K *et al* (2011) *Journal of Gastroenterology* **46**:894-905.
[PubMed]

Effect of *Lactobacillus casei* Shirota on colonic transit time in patients with chronic constipation. Krammer H.-J, von Seggern H, Schaumburg J *et al* (2011) *Coloproctology* **33**:109-113.
[Article]

Fermented milk containing *Lactobacillus casei* strain Shirota reduces incidence of hard or lumpy stools in healthy population. Sakai T, Makino H, Ishikawa E *et al* (2011) *International Journal of Food Sciences & Nutrition* **62**(4):23-30.
[Reprint available on request] [PubMed]

Effects of a probiotic fermented milk beverage containing *Lactobacillus casei* strain Shirota on defecation frequency, intestinal microbiota, and the intestinal environment of healthy individuals with soft stools. Matsumoto K, Takada T, Shimizu K *et al* (2010) *Journal of Bioscience & Bioengineering* **110**(5):547-52.
[Reprint available on request] [PubMed]

Probiotic effects on intestinal fermentation patterns in patients with irritable bowel syndrome. Barrett JS, Canale KEK, Geary RB *et al* (2008) *World Journal of Gastroenterology* **14**(32):5020-5024.
[PubMed]

Beneficial effects of *Lactobacillus casei* in ulcerative colitis: a pilot study. Mitsuyama K, Matsumoto S, Yamasaki H *et al* (2008) *Journal of Clinical Biochemistry and Nutrition* **43**(Suppl 1):78-81.

Effect of probiotic treatment on deranged neutrophil function and cytokine responses in patients with compensated alcoholic cirrhosis. Stadlbauer V, Mookerjee RP, Hodges S *et al* (2008) *Journal of Hepatology* **48**:945-951.
[Reprint available on request] [PubMed]

High dose probiotic and prebiotic co-therapy for remission induction of active Crohn's disease. Fujimori S, Tatsuguchi A, Gudis K *et al* (2007) *Journal of Gastroenterology & Hepatology* **22**: 1199-1204.
[PubMed]

The effect of a probiotic milk product containing *Lactobacillus casei* strain Shirota on the defecation frequency and the intestinal microflora of sub-optimal health state volunteers: a randomized placebo-controlled cross-over study. Matsumoto K, Takada T, Shimizu K *et al* (2006) *Bioscience Microflora* **25**(2):39-48.
[Reprint available on request]

The effects of a synbiotic fermented milk beverage containing *Lactobacillus casei* strain Shirota and transgalactosylated oligosaccharides on defecation frequency, intestinal microflora, organic acid concentrations, and putrefactive metabolites of sub-optimal health state volunteers: a randomized placebo-controlled cross-over study. Shioiri T, Yahagi K, Nakayama S *et al* (2006) *Bioscience Microflora* **25**(4):137-146.

[Reprint available on request]

Probiotic beverage containing *Lactobacillus casei* Shirota improves gastrointestinal symptoms in patients with chronic constipation. Koebnick C, Wagner I, Leitsmann P *et al* (2003) *Canadian Journal of Gastroenterology* **17**(11):655 – 659.

[Reprint available on request] [Free paper] [PubMed]

Effect of administration of *Lactobacillus casei* Shirota on sodium balance in an infant with short bowel syndrome. Candy DCA, Densham L, Lamont LS *et al* (2001) *Journal of Pediatric Gastroenterology & Nutrition* **32**(4):506-508.

[PubMed]

4. **Metabolic risk factors** (e.g. insulin resistance, blood pressure)

Habitual intake of fermented milk products containing *Lactobacillus casei* strain Shirota and a reduced risk of hypertension in older people. Aoyagi Y, Park S, Matsubara S *et al* (2016) *Beneficial Microbes* **8**(1): 23-29.

[Free paper] [PubMed]

Probiotic supplementation prevents high-fat, overfeeding-induced insulin resistance in human subjects. Hulston CJ, Churnside AA, Venables MC (2015) *British Journal of Nutrition* **113**(4):596-602

[Reprint available on request] [Free paper] [PubMed]

Antihypertensive effect of extracts of *Lactobacillus casei* in patients with hypertension.

Nakajima K, Hata Y, Osono Y *et al* (1995) *Journal of Clinical Biochemistry & Nutrition* **(18)**:181-187.

[Free article] [Abstract]

5. **Cancer**

Probiotic beverage with soy isoflavone consumption for breast cancer prevention: a case control study. Toi M, Hirota S, Tomotaki A, *et al* (2013) *Current Nutrition & Food Science* **9**(4):194-200.

[Free paper]

Probiotics enhance the clearance of human papillomavirus-related lesions: a prospective controlled pilot study. Verhoeven V, Renard N, Makar A *et al* (2012) *European Journal of Cancer* **22**(1):46-51.

[Reprint available on request] [PubMed]

Prevention of recurrence with Epirubicin and *Lactobacillus casei* after transurethral resection of bladder cancer. Naito S, Koga H, Yamaguchi A *et al* (2008) *Journal of Urology* **179**:485-490.

[PubMed]

Perioperative synbiotic treatment to prevent postoperative infectious complications in biliary cancer surgery: A randomized controlled trial. Sugawara G, Nagino M, Nishio H *et al* (2006) *Annals of Surgery* **244**(5):706-714.

[Free paper] [PubMed]

Randomized trial of dietary fibre and *Lactobacillus casei* administration for prevention of colorectal tumours. Ishikawa H, Akedo I, Otani T *et al* (2005) *International Journal of Cancer* **116**:762-767.

[Reprint available on request] [PubMed]

Habitual intake of lactic acid bacteria and risk reduction of bladder cancer. Ohashi Y, Nakai S, Tsukamoto T *et al* (2002) *Urologia Internationalis* **68**:273-280.

[Reprint available on request] [PubMed]

Preventive effect of a *Lactobacillus casei* preparation on the recurrence of superficial bladder cancer in a double blind trial. Aso Y, Akaza H, Kotake T *et al* (1995) *European Urology* **27**:104 – 109.

[PubMed]

Suppressing effect of *Lactobacillus casei* administration on the urinary mutagenicity arising from ingestion of fried ground beef in the human. Hayatsu H & Hayatsu T (1993) *Cancer Letters* **73**:173-179.

[PubMed]

6. Immune function

Immune response of healthy adults to the ingested probiotic *Lactobacillus casei* Shirota.

Harbige LS, Pinto E, Allgrove J, Thomas LV (2016) *Scandinavian Journal of Immunology* **84**(6):353-364

[PubMed]

Effects of *Lactobacillus casei* Shirota ingestion on common cold infection and herpes virus antibodies in endurance athletes: a placebo-controlled, randomized trial. Gleeson M, Bishop N C, Struszczyk L (2016) *European Journal of Applied Physiology* **116**(8):1555-63.

[Free paper] [PubMed]

Immunomodulatory effects of a probiotic drink containing *Lactobacillus casei* Shirota in healthy older volunteers. Dong H, Rowland I, Thomas LV, Yaqoob P (2013) *European Journal of Nutrition* **52**(8):1853-1863.

[PubMed]

Dysregulated circulating dendritic cell function in ulcerative colitis is partially restored by probiotic strain *Lactobacillus casei* Shirota. Mann ER, You J, Horneffer-van der Sluis V *et al* (2013) *Mediators of Inflammation* Article ID 573576.

[Free paper] [PubMed]

Daily *Lactobacillus casei* Shirota intake increases natural killer cell activity in smokers. Reale M, Boscolo P, Bellante V *et al* (2011) *British Journal of Nutrition* **108**(2):308-314.

[Reprint available on request] [PubMed]

Flexible cytokine production by macrophages and T cells in response to probiotic bacteria.

Shida K, Nanno M, Nagata S (2011) *Gut Microbes* **2**(2):109-114.

[Free paper] [PubMed]

Suppressive effect on activation of macrophages by *Lactobacillus casei* strain Shirota genes determining the synthesis of cell wall-associated polysaccharides. Yasuda E, Serata M, Sako T (2008) *Applied & Environmental Microbiology* **74**(15):4746-4755.
[Free paper] [PubMed]

Effects of a fermented milk drink containing *Lactobacillus casei* strain Shirota on the human NK-cell activity. Takeda K & Okumura K (2007) *The Journal of Nutrition* **137**(1): 791-793.
[Reprint available on request] [PubMed]

Essential roles of monocytes in stimulating human peripheral blood mononuclear cells with *Lactobacillus casei* to produce cytokines and augment natural killer cell activity. Shida K, Suzuki T, Kiyoshima-Shibata J *et al* (2006) *Clinical & Vaccine Immunology* **13**(9):997-1003.
[Free paper] [PubMed]

Induction of interleukin-12 by *Lactobacillus* strains having a rigid cell wall resistant to intracellular digestion. Shida K, Kiyoshima-Shibata J, Nagaoka M *et al* (2006) *Journal of Dairy Science* **98**:3306-3317.
[Free paper] [PubMed]

Interleukin-12 is involved in the enhancement of human natural killer cell activity by *Lactobacillus casei* Shirota. Takeda K, Suzuki T, Shimada SI *et al* (2006) *Clinical & Experimental Immunology* **146**:109-115.
[Free paper] [PubMed]

Well-controlled proinflammatory cytokine responses of Peyer's patch cells to probiotic *Lactobacillus casei*. Chiba Y, Shida K, Nagata S *et al* (2010) *Immunology* **130**:352-362.
[PubMed]

Oral delivery of *Lactobacillus casei* Shirota modifies allergen-induced immune responses in allergic rhinitis. Ivory K, Chambers S, Pin C *et al* (2008) *Clinical and Experimental Allergy* **38**:1-8.
[Reprint available on request] [PubMed]

Modulation of natural killer cell activity by supplementation of fermented milk containing *Lactobacillus casei* in smokers. Morimoto K, Takeshita T, Nanno M *et al* (2005) *Preventive Medicine* **40**:589-594.
[Reprint available on request] [PubMed]

Effects of a fermented milk drink containing *Lactobacillus casei* strain Shirota on the immune system in healthy subjects. Nagao F, Nakayama M, Muto T, Okumura K (2000) *Bioscience Biotechnology & Biochemistry* **64**(12):2706-2708.
[Reprint available on request] [Free paper]

7. Miscellaneous (e.g. safety, gut survival, enteral feed, sports, oral, reduction of harmful substances, etc)

Beneficial effects of *Lactobacillus casei* strain Shirota on academic stress-induced sleep disturbance in healthy adults: a double-blind, randomised, placebo-controlled trial. Takada M, Nishida K, Gondo Y *et al* (2017) *Beneficial Microbes* **8**(2):153-162
[Free paper] [PubMed]

Recovery of *Lactobacillus casei* strain Shirota (LcS) from the intestine of healthy Vietnamese adults after intake of fermented milk. Mai TT, Hop DV, Anh TT *et al* (2017) *Asia Pacific Journal of Clinical Nutrition* **26**(1):72-77

[Free paper] [PubMed]

The effect of probiotic treatment on elderly patients with distal radius fracture: a prospective double-blind, placebo-controlled randomised clinical trial. Lei M, Hua LM & Wang DW (2016) *Beneficial Microbes* **7**(5):631-637
[PubMed]

Intake of a fermented soymilk beverage contains moderate levels of isoflavone aglycones enhances bioavailability of isoflavones in healthy premenopausal Japanese women: a double-blind, placebo-controlled, single-dose, crossover trial. Nagino T, Kano M, Masuoka N *et al* (2016) *Bioscience Microbiota, Food & Health* **35**(1):9-17
[Free paper] [PubMed]

Survival of *Lactobacillus casei* strain Shirota in the intestines of healthy Chinese adults. Wang R, Chen S, Jin J *et al* (2015) *Microbiology Immunology* **59**(5):268-76
[PubMed]

***In vitro* study of the potential protective role of *Lactobacillus* strains by acrylamide binding.** Serrano-Nino CJ, Cavazos-Garduno A, Gonzalez-Cordova AF *et al* (2014) *Journal of Food Safety* **34**:62-68.
[Free paper]

The effect of a commercial probiotic drink containing *Lactobacillus casei* strain Shirota on oral health in healthy dentate people. Sutula J, Coulthwaite LA, Thomas LV *et al* (2013) *Microbial Ecology in Health & Disease* **24**:21003.
[Free paper] [PubMed]

***Lactobacillus casei* Shirota modulation of ammonia metabolism in physical exercise.** Fuskevåg O-M, Annika Broster A, Davies N *et al* (2012) *International Journal of Probiotics and Prebiotics* **7**(1):13-16.
[Reprint available on request] [Abstract]

Effects of probiotic bacteria on *Candida* presence and IgA anti-*Candida* in the oral cavity of elderly. Mendonça FHBP, dos Santos SSF, Goncalves e Sliva CR *et al* (2012) *Brazilian Dental Journal* **23**(5):534-538.
[Free paper] [PubMed]

Effects of synbiotic treatment on serum level of *p*-cresol in haemodialysis patients: a preliminary study. Nakabayashi I, Nakamura M, Kawakami K *et al* (2011) *Nephrology Dialysis Transplantation* **26**(3):1094-1098
[PubMed]

Probiotics affect the clinical inflammatory parameters of experimental gingivitis in humans. Slawik S, Staufienbiel I, Schilke R *et al* (2011) *European Journal of Clinical Nutrition* **65**(7):857-63
[PubMed]

Perioperative synbiotic treatment to prevent infectious complications in patients after elective living donor liver transplantation. A prospective randomised study. Eguchi S, Takatsuki M, Hidaka M *et al* (2010) *The American Journal of Surgery* **201**(4): 498-502
[PubMed]

Key role of teichoic acids on aflatoxin B1 binding by probiotic bacteria. Hernandez-Mendoza A, Guzman-de-Peña D, Garcia HS (2009) *Journal of Applied Microbiology* **107**(2):395-403.
[PubMed]

A randomized, double-blind, placebo-controlled pilot study of a probiotic in emotional symptoms of chronic fatigue syndrome. Rao AV, Bested AC, Beaulne TM *et al* (2009) *Gut Pathogens* **1**:6 doi:10.1186/1757-4749-1-6
[Free paper] [PubMed]

The influence of a probiotic milk drink on the development of gingivitis: a pilot study. Staab B, Eick S, Knofler G *et al* (2009) *Journal of Clinical Periodontology* **36**:850-856.
[PubMed]

Impact of consuming a milk drink containing a probiotic on mood and cognition. Benton D, Williams C, Brown A (2007) *European Journal of Clinical Nutrition*, **61**:355–361.
[PubMed]

Effects of *Lactobacillus casei* Shirota, *Bifidobacterium breve* and oligofructose-enriched inulin on colonic nitrogen-protein metabolism in healthy humans. De Preter V, Vanhoutte T, Huys G *et al* (2007) *American Journal of Physiology* **292**: 358-368.
[PubMed]

Survivability of a probiotic *Lactobacillus casei* in the gastrointestinal tract of healthy human volunteers and its impact on the faecal microflora. Tuohy KM *et al* (2007) *J Appl Microbiol* **102**(4): 1026-1032.
[PubMed]

Clinical safety of a *Lactobacillus casei* Shirota as a probiotic in critically ill children. Srinivasan R, Meyer R, Padmanabhan R, Britto J (2006) *Journal of Pediatric Gastroenterology and Nutrition* **42**:171-173.
[PubMed]

Synbiotics reduce postoperative infectious complications: a randomized controlled trial in biliary cancer patients undergoing hepatectomy. Kanazawa H, Nagino M, Kamiya S *et al* (2005) *Langenbeck's Archives of Surgery* **390**(2): 104-113.
[PubMed]

The *in vivo* use of stable isotope-labelled biomarkers lactose-[¹⁵N]ureide and [²H₄]tryosine to assess the effects of pro- and prebiotics on the intestinal flora of healthy human volunteers. De Preter V, Geboes K, Verbrugghe K *et al* (2004) *British Journal of Nutrition* **92**:439-446.
[PubMed]

Survival of a probiotic, *Lactobacillus casei* strain Shirota in the gastrointestinal tract: selective isolation from faeces and identification using monoclonal antibodies. Yuki N, Watanabe K, Mike A *et al* (1999) *International Journal of Food Microbiology* **48**:51-57.
[PubMed]

The effect of consumption of milk fermented by *Lactobacillus casei* strain Shirota on the intestinal microflora and immune parameters in humans. Spanhaak S, Havenaar R & Schaafsma G (1998) *European Journal of Clinical Nutrition* **52**(12):899-907.
[PubMed]