

YOUR GUIDE TO

L. casei Shirota

Science has always been at the heart of the Yakult company, since the microbiologist Dr Shirota selected and cultivated *Lactobacillus casei* Shirota (*L. casei* Shirota) in the 1930's.

In the field of probiotics and microbiology, Yakult has an unparalleled reputation for quality, safety and scientific research, with over 100 published human clinical trials.

In addition to investigating the role of the gut microbiota in health and disease, Yakult has several studies investigating the fundamental qualities of *L. casei* Shirota as a probiotic. Fundamental research includes studies showing survival of the strain in the gut, safe consumption for humans and modulation of the intestinal microbiota and metabolites.



SURVIVAL

Survival through the gut is considered a key characteristic of probiotic strains.

The strongest evidence for survival is detection of the strain in the faeces of people after they have consumed the probiotic.

L. casei Shirota was selected and cultivated because of its ability to survive the harsh conditions of the gut. There are several peer-reviewed publications that describe human studies showing the survival of *L. casei* Shirota including, but not limited to, studies in European¹ and Asian populations², children³ and critically ill children.⁴

MODULATION

Several studies have shown that probiotic consumption not only increases the presence of the probiotic strain being consumed, but also modulates the resident gut microbiota by encouraging the growth and numbers of our own bacteria.

The ability for *L. casei* Shirota to modulate the gut microbiota has been reported in a number of peer-reviewed publications including intervention trials in children³ and healthy adults.¹

Specifically, ingestion of *L. casei* Shirota has been shown to increase levels of *Bifidobacterium* and *Lactobacillus*.^{1,5,6}

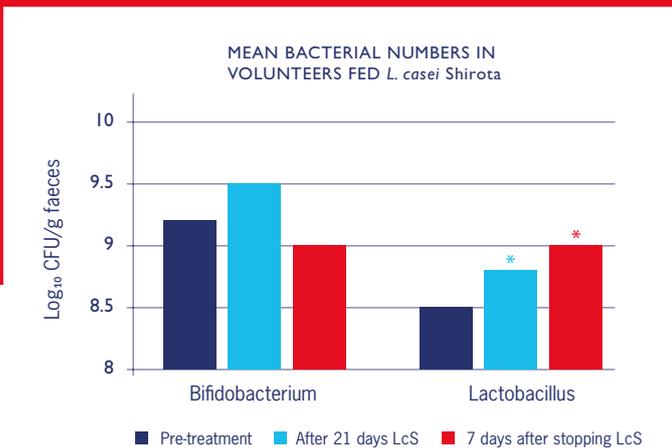
Additionally, ingestion of *L. casei* Shirota has also been shown to reduce levels of certain microbes, including: *Clostridioides difficile*, *Clostridium peringens*, Enterobacteriaceae, *Staphylococcus* and *Pseudomonas*.⁷⁻⁹

RESEARCH INSIGHT: *L. casei* Shirota - SURVIVAL IN THE GUT & MODULATION OF THE INTESTINAL MICROBIOTA

Tuohy et al. (2007) *J Appl Microbiol* 102(4):1026-1032.

Method

A double-blind, placebo-controlled study at the University of Reading, involved 20 healthy volunteers who consumed either *L. casei* Shirota (at least 1.3×10^9 CFU) as a fermented milk drink or placebo for 21 days. Stool samples were collected at days 0, 7, 14, 21 and 28 to measure survival of *L. casei* Shirota and changes to faecal bacteria.



SAFETY

If you are recommending a probiotic to a patient, you want to know that it is not going to cause adverse effects. Lactic acid bacteria have been consumed for centuries in fermented foods. *L. casei* Shirota has an unparalleled history of safe use, having been consumed by the general public for more than 85 years, as well as being used by independent researchers and clinicians for a range of patients. The studies published to date show no reports of serious side effects or adverse events. Similarly, there has never been any report on the uptake of transferrable antibiotic resistance genes by *L. casei* Shirota.

In fact, a study designed with the primary objective of assessing safety of *L. casei* Shirota, delivered via enteral feeding tubes in critically ill children, has been conducted.⁴

REFERENCES

1. Tuohy et al. (2007) *J Appl Microbiol* 102 (4): 1026-1032.
2. Mai et al. (2017) *Asia Pac J Clin Nutr* 26(1): 72-77.
3. Wang et al. (2015) *Microbiol Immunol* 59(5): 268-76.
4. Srinivasan et al. (2006) *J Pediatr Gastroenterol Nutr* 42: 171-173
5. Spanhaak et al. (1998) *Eur J Clin Nutr* 52: 899-907.
6. Wang et al. (2015) *Ann Nutr Metab* 67: 257-266
7. Shirota et al. (1966) *Jpn J Bacteriol* 21(5): 274-283.
8. Nagata et al. (2016) *Ann Nutr Metab* 68(1): 51-9.
9. Tsuji et al. (2014) *Int J Probiotics Prebiotics* 9(1/2): 31-38

Results

Seven days after subjects started to take the probiotic, *L. casei* Shirota was recovered at a mean level of 1.1×10^7 CFU/g of faeces, and this level was maintained throughout the course of probiotic consumption and decreased after participants stopped consuming the probiotic.

Concurrently, in subjects consuming *L. casei* Shirota, an increase in total lactobacilli was observed, which persisted even after probiotic consumption had stopped. Bifidobacteria were also found to increase during the 21 days, but this increase was not sustained once consumption of *L. casei* Shirota had stopped.

RESEARCH INSIGHT:

L. casei Shirota - SAFETY

Srinivasan R et al. (2006) *J Pediatr Gastroenterol Nutr* 42:171-173.

Method

L. casei Shirota was administered three times a day at a dosage of 107 CFU/day via an indwelling nasogastric tube for five days to children admitted to a paediatric intensive care unit in the UK. Safety was assessed by bacteriologic surveillance for the strain in surface swabs, endotracheal aspirates and blood, urine and sterile body fluid samples.

Results

From the 28 patients with available safety data, there was no evidence of either colonisation or bacteraemia with *L. casei* Shirota from this testing. The *L. casei* Shirota was well tolerated with no apparent side effects or adverse reactions, supporting the conclusion that *L. casei* Shirota as a probiotic in critically ill children fed via a nasogastric tube appears safe.

April 2020

FIND OUT MORE AT YAKULT.CO.UK/HCP

Yakult is a science based company, dedicated to scientific research and education.

Contact us at science@yakult.co.uk or on 020 8842 7600 for more information.

This resource is intended for healthcare professionals and is not to be distributed to patients