SCIENCE

SACCO system

#probiotics

CRL 1505 Vs. Virus

Probiotics have been shown to effectively reduce the incidence of respiratory tract infections (RTIs). In particular, the strain Lactobacillus rhamnosus CRL 1505 has demonstrated an important capacity to keep RTIs at bay.

Clinical evidence:

A randomized, double-blind, placebo-controlled trial with 298 pre-school children (2-5 years old) that consumed either yogurt containing CRL 1505 (>108 cfu/day) or a placebo yogurt 5 days/week for 6 months showed [1]:

- **Lower use of antibiotics**
- **A significantly reduced number of infections** in children consuming the probiotic-containing yogurt. In particular, it lowered the incidence of:
  * upper respiratory tract infection
  * pharyngitis and tonsillitis
  * acute diarrhea

In vivo, preclinical evidence

• **CRL 1505** led to an **earlier immune response** and reduced lung damage when nasal challenges with different types of virus were performed [2-3].

• **CRL1505** heightened **infection resistance to the airway pathogen** *Streptococcus pneumoniae* serotype 14, mice models [4-5]

• Heat-inactivated **CRL 1505** when administered intranasally has similar benefits to those observed when the live probiotic is administered [6].

Mechanisms of action

The mechanisms of action of **CRL 1505** have been unveiled in a series of in vivo models, and include increased basal levels of interferon gamma (IFN-γ) in the host, a key activator of the innate and adaptive immune system, and of the anti-inflammatory cytokine interleukin 10 (IL-10) [4]. These modulations allow the priming of the immune system to tackle RTIs through an overall stimulation of the immune system, intra and extra-intestinally [4].

1 Villena J, Salva S, Núñez M, Corzo J, Tolaba R, Faedda J, Font G, Alvarez S. (2012). Probiotics for everyone! The novel immunobiotic Lactobacillus rhamnosus CRL1505 and the beginning of social probiotic programs in Argentina. International Journal of Biotechnology for Wellness Industries. 1: 189-198.

2 Chiba E, Tomosada Y, Vizoso-Pinto MG, Salva S, Takahashi T, Tsukida K, Kitazawa H, Alvarez S, Villena J. (2013). Immunobiotic Lactobacillus rhamnosus improves resistance of infant mice against respiratory syncytial virus infection. International Immunopharmacology 17: 373-382.

3 Zelaya H, Tsukida K, Chiba E, Marranzino G, Alvarez S, Kitazawa H, Agüero G, Villena J. (2014). Immunobiotic lactobacilli reduce viral-associated pulmonary damage through the modulation of inflammation–coagulation interactions. International Immunopharmacology 19: 161-173.

4 Salva S, Villena J, Alvarez S. (2010). Immunomodulatory activity of Lactobacillus rhamnosus strains isolated from goat milk: Impact on intestinal and respiratory infections. Int J Food Microbiol 141(1-2): 82-9.

5 Salva S, Núñez M, Villena J, Ramón A, Fonta G, Alvarez S. (2011). Development of a fermented goats' milk containing Lactobacillus rhamnosus: in vivo study of health benefits. J Sci Food Agric 91: 2355–2362.

6 Tomosada Y, Chiba E, Zelaya H, Takahashi T, Tsukida K, Kitazawa H, Alvarez S, Villena J. (2013). Nasally administered Lactobacillus rhamnosus strains differentially modulate respiratory antiviral immune responses and induce protection against respiratory syncytial virus infection. BMC Immunology, 14: 40.