

## Common colds- influenza

### Description of the disease

Common cold is a contagious, viral infectious disease of the upper respiratory system, primarily caused by rhinoviruses or coronaviruses. There is no known cure, but it is rarely fatal.

Influenza, commonly referred to as the flu, is an infectious disease caused by RNA viruses of the family *Orthomyxoviridae* (the influenza viruses). The most common symptoms of the disease are chills, fever, sore throat, muscle pains, severe headache, coughing, weakness and general discomfort. In more serious cases, influenza causes pneumonia, which can be fatal, particularly for the young and the elderly.

### Trials with probiotics in literature

At this moment (November 2010) 7 studies describe in literature effects of probiotics in the reducing the risk of respiratory infections (Table 1). Most, although not all, have shown a positive outcome.

Table 1. overview of clinical studies preventing viral airway infections

Study	Characteristics	Population	Duration	Number per group	Probiotics	Cfu (daily)	Outcome	Remarks
Hatakka <i>et al.</i> 2001	RPD	Daycare, 1-6 years	7 months	296/298	LGG	2x10 <sup>8</sup>	+	Fewer days of absence No difference in days with respiratory symptoms
(Turchet <i>et al.</i> 2003)		elderly	3 weeks		L. casei DN-114001		+	Based on abstract only Duration lower
(Tubelius <i>et al.</i> 2005)	RPD	Adults (partly shiftworkers)	3 months	94/87	L. reuteri ATCC55730	1x10 <sup>8</sup>	+	Less sick leave, no specific result for respiratory tract infections
(Weizman <i>et al.</i> 2005)	RPD	Babies 4-10 months	3 months	60/73/68	B. lactis BB12 L.reuteri 55730	10 <sup>7</sup> /gram powder	-	No difference in respiratory track infections
(de Vrese <i>et al.</i> 2006) (de Vrese <i>et al.</i> 2005)	RPD	Adults	3 months	238/242	L. gasseri PA16/8 B. longum SP07/3 B bifidum MF20/5	4x10 <sup>7</sup> 5x10 <sup>6</sup> 5x10 <sup>6</sup>	+	All people got vitamins and minerals 2 days shortening episodes
(Kekkonen <i>et al.</i> 2007)		Marathon runners	3 months		LGG		-	Abstract only No difference in respiratory tract infection

(Guillemard et al. 2009).	RDP M	70+ free living	3 months	537/535	L. casei DN-114001	10 <sup>10</sup>	+	20% with major protocol deviations Reduction in duration No difference in number/severity/fever/QoL
(Leyer et al. 2009)	RPD	Children 3-5 year	6 months	104/110/112	L. acidophilus NCFM B. animalis Bi07	10 <sup>10</sup>	+	Reduced incidence and duration of fever, coughing, rhinorrhea
(Cox et al. 2010)	RPD C	athletes	1 month	20	L. fermentum VRI-003	10 <sup>10</sup>	+	Abstract only Less days with respiratory symptoms
(Merenstein et al. 2010)	RPD	Children 3-6 year	3 months	314/324	L. casei (DN-114 001)	2x10 <sup>9</sup>	+	Lower incidence of upper respiratory tract infections
(Merenstein et al. 2010)	RPD	Children 1-3 year	3 months	87/95	B. lactis BB12	10 <sup>10</sup>	-	No statistical significant differences

R = randomized  
D = double blind  
P = placebo controlled  
M = multicenter  
C = crossover

A recent systematic review about the use of probiotics in the prevention of upper and lower respiratory tract infections concluded that the incidence of these infections was not considerably influenced by probiotics (Vouloumanou et al. 2009). However, probiotics did reduce the severity and the duration of the infections.

Another review on this topic concludes that: "overall, a promising outlook on the potential of probiotics in the combat of airway infections appears, although different probiotic strains may differ in their effects" (Wolvers et al. 2010).

### Workingmechanisms

For respiratory tract infections, the most important working mechanism for probiotics is stimulation of the host systemic immune system.

T-helper 1 cells are part of the immune system and play an important role in cytotoxicity and local inflammatory reactions and these cells are important for combating viruses. Interferon- $\gamma$  (IFN- $\gamma$ ) is a good marker of T-helper 1 cells. Maintenance of IFN- $\gamma$  levels has been associated with prevention of respiratory tract infections (Cox et al. 2010).

## Results

All the strains in Winlove 328 have been tested for their ability to stimulate IFN- $\gamma$  *in vitro*. The relative levels of IFN- $\gamma$  are plotted in the graph below.

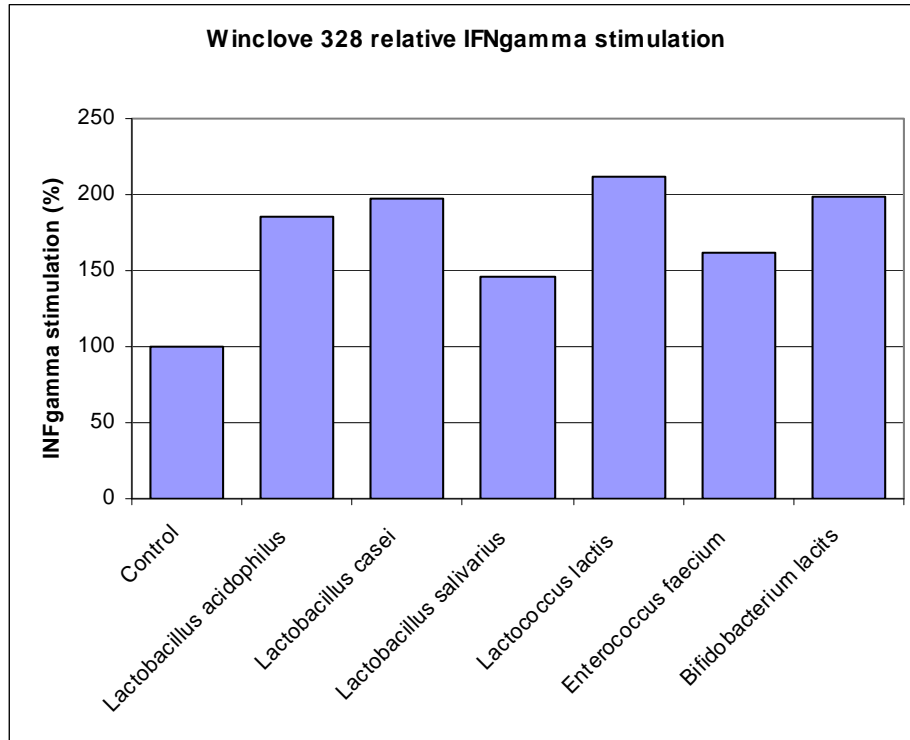


Figure 1. IFN- $\gamma$  stimulation by probiotic strains in Winlove 328-III

As is shown in figure 1, all the strains in Winlove 328 are able to stimulate the production of IFN- $\gamma$ . There is an increase between 140 and 220% relative to the control, approximately.

These results indicate that Winlove 328 can stimulate the T-helper 1 cells and in this way stimulate the host systemic immune system.

This support of the immune response could help in the prevention of common cold and influenza.

## References

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