Prevention of recurrent urinary tract infections

A urinary tract infection (UTI) is a bacterial infection of the urinary tract and occurs at least once in a lifetime among one third of women. A recurrent UTI (rUTI) is defined as two episodes of UTI in six months or three or more in one year. Between 35% to 53% of women treated for UTIs will experience an rUTI within twelve months.

Studies have shown that the urinary tract is inhabited by micro-organisms and has its own unique microbial community. While it is still unknown what causes a UTI, some factors thought to disturb the urinary tract are changes in hygiene, medication, sexual activity and diet (see figure 1). The treatment standard for UTIs are antibiotics. Although antibiotics are very effective initially, they don't work the same way for every patient and are not ideal for long term use, as happens in preventative use for rUTIs. Also, there is no consensus on the ideal dose, duration, and schedule within UTIs. Antibiotics cannot support the host and therefore don’t help to resolve the risk of long-term infection recurrence. Finally, antibiotics come with many negative side effects such as antibiotic resistance. These side effects have prompted researchers to look into alternatives such as probiotics to support treatment and to prevent rUTIs.

Wincklove Clear

Wincklove Clear is a multispecies probiotic food supplement developed to prevent rUTIs. The bacterial strains have been specifically selected for their capacity to:

- compete with pathogens for attachment sites and nutrients
- inhibit the adhesion of uropathogens to the surface of epithelial cells
- produce antibacterial agents such as bacteriocins and hydrogen peroxide
- acidify the environment through lactic acid production
- stimulate and balance the host immune system.
**In vitro evidence**

Winclove Clear is developed to inhibit growth of pathogens in the vagina and bladder, and stimulate the immune system. This is achieved by combining probiotics with the functional ingredient cranberry. Cranberry is well-known for its capacities as a non-antibiotic treatment in case of a rUTI.

The probiotic strains in Winclove Clear have been tested and selected in vitro for their capacity to:
- survive the gastro-intestinal tract
- inhibit pathogens
- adhere to surface of epithelial cells
- form aggregations
- positively stimulate the immune system (decrease production of IL-6 and IL-8 and increase production of IL-10)
- strengthen the gut barrier function
- produce lactic acid.

The capacity of the probiotic strains to inhibit the uropathogen *E. coli* is shown in figure 3. *E. coli* often enters the bladder via the vagina from the rectum and is able to colonize the bladder epithelium. The graph shows that all strains in Winclove Clear are very well capable of inhibiting *E. coli*.

The effect of the probiotic strains to strengthen the gut epithelial barrier is shown in figure 4. For this, trans epithelial electric resistance (TEER) was measured in a transwell system of a CaCo2 cell line. An increase in the percentage of TEER indicates an improved barrier function. The graph shows that all strains in Winclove Clear are capable to strengthen the barrier function.

### References


### Safety and Quality Profile

All probiotic strains in Winclove Clear have the Qualified Presumption of Safety (QPS)-status. Winclove is a NSF International Certified GMP facility for manufacturing dietary supplements. Winclove’s food safety management system is ISO 22000:2005 certified for the development and production of pre- and probiotics.

### Indication

Bacterial strains embedded and preserved with a unique Winclove technique that ensures biological activity, gastrointestinal survival and stability of the probiotic strains.

### Quality


### Ingredients

- Colony forming units (CFU): $1 \times 10^9$ CFU/gram.
- Dosage: 3 grams a day.
- Treatment period: As long as desired.
- Application form: Powder (delivered in bulk, sachets or capsules).
- Stability: Stable at room temperature.
- Marketing: Private label.

### Figure 3:

**Inhibition of the uropathogen *E. coli* by the probiotic strains in Winclove Clear.** The higher the inhibition zone, the better the inhibition.

### Figure 4:

**Effect on the epithelial barrier function by the strains in Winclove Clear.** An increase in % TEER indicates an improved barrier function.