

Bio.Me™ Femme UT

DISCLAIMER: THIS INFORMATION IS PROVIDED FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH CARE PRACTITIONERS ONLY. THIS INFORMATION IS NOT FOR USE BY CONSUMERS. THE INFORMATION AND OR PRODUCTS ARE NOT INTENDED FOR USE BY CONSUMERS OR PHYSICIANS AS A MEANS TO CURE, TREAT, PREVENT, DIAGNOSE OR MITIGATE ANY DISEASE OR OTHER MEDICAL CONDITION. THE INFORMATION CONTAINED IN THIS DOCUMENT IS IN NO WAY TO BE TAKEN AS PRESCRIPTIVE NOR TO REPLACE THE PHYSICIANS DUTY OF CARE AND PERSONALISED CARE PRACTICES.

Bio.Me™ Femme UT is a multispecies probiotic developed to work on the axis of gut, vagina and urinary microbiomes in the aim to prevent recurrent urinary tract infections and balance these female microbiomes. The formulation consists of seven specifically selected probiotic strains for their capacity to inhibit uropathogen growth in the vagina, bladder and gut, to strengthen the intestinal barrier, and stimulate the immune system. The bacterial strains have been screened for their capacity to:

- compete with uropathogens for attachment sites and nutrients¹
- strengthen gut barrier function
- produce antibacterial agents such as hydrogen peroxide¹
- acidify the environment through lactic acid production
- support the host immune system

Probiotic strain	GI cell adhesion	Pathogen inhibition	Immunomodulation			Barrier function	Lactic acid production	Bacterial aggregation
			- IL-6	- IL-8	+ IL-10			
L.plantarum W21	+	+	+	+	+	+	+	+
L.acidophilus W22	+	+	+	+	+	+	+	+
L.salivarius W24	+	+	+	+	+	+	+	+
L.casei W56		+	+	+	+	+	+	+
L.helveticus W74		+	+	+	+	+	+	+
L.brevis W63		+	+	+	+	+	+	+
L.pentosus KCA-1W2	+	+					+	+

Table 1:
Summary
of selection
criteria

Nutritional Information	
Actives	Per Dose 3g (1.5 tsp)
Winclove Clear Probiotics 3 billion CFU	
Lactobacillus acidophilus W22, Lactobacillus brevis W63, Lactobacillus casei W56, Lactobacillus helveticus W74, Lactobacillus pentosus W2 (KCA1), Lactobacillus plantarum W21, Lactobacillus salivarius W24	
Other Ingredients: Maize starch, Maltodextrin, Hydrolysed rice protein	

Probiotic activity in the vagina:

For probiotics to be able to help a woman maintain a healthy vagina, lactobacilli must exhibit adequate antibacterial activity. The most relevant property in this context is the ability to maintain a vaginal pH of ≤ 4.5 and this depends particularly on the number of lactic acid producing bacteria. An acidic vaginal environment stimulates the replication of probiotic bacteria and subsequent production of antibacterial substances, including bacteriocins and H₂O₂. In addition, probiotics may offer protection against genitourinary infections through production of biosurfactants. Bio-surfactants discourage the growth of pathogens by inhibiting adhesion of microorganisms along uroepithelial cells. Finally, probiotics may co-aggregate with uropathogens to block adhesion and/or displace previously adherent uropathogens on vaginal epithelial cells.

Probiotic activity in the bladder:

It was long thought that the urinary tract was sterile environment, but recent technological advancements gave new input for recent studies that have shown that the urinary tract is inhabited by micro-organisms and has its own unique microbial community^{2,3}. Some commonly found taxa in healthy individuals are Lactobacillus, Actinomyces, Streptococcus and Anaerococcus. However, it is hard to establish exactly what organisms the normal urinary microbiome includes due to the this area of research being in its infancy^{4,5}. Most urinary tract infections are caused by bacteria that enter the urethra and then the bladder, these include E. coli, P. mirabilis, S. saprophyticus, P. aeruginosa, E. faecalis and Klebsiella^{6,7,8}. Probiotics are able to support the bladder by:

- Lactic acid production
- Immunomodulation
- Increase in lactobacilli
- Pathogen inhibition

Probiotic activity in the gut:

The microbiota serves several important functions in the intestinal lumen, such as the break-down of non-digested and indigestible polysaccharides and it supplies essential substrates like vitamins and short chain fatty acids. A healthy microbiota protects us from the colonisation and overgrowth of potential pathogens, a process known as colonisation resistance via:

- Competition for nutrients
- Competition for space and adhesion sites on the intestinal epithelium
- Elimination of toxins produced by pathogens
- Lowering the pH in the lumen (locally)
- Production of anti-microbial substances (natural antibiotics) that act against pathogens

Development of Bio.Me™ Femme UT

In vitro data

Pathogen Inhibition by Bio.Me™ Femme UT to several uropathogens

Uropathogens including E. coli and P. aeruginosa often enter the bladder via the vagina from the rectum and grow and multiply after successful adhesion and colonisation of the bladder epithelium.

Probiotic strain	E.coli	C.albicans	S.aureus	P.aeruginosa
L. plantarum W21	+	+		+
L. acidophilus W22	+	+	+	+
L. salivarius W24	+	+	+	+
L. casei W56	+			
L. helveticus W74	+	+		
L. brevis W63	+	+		

Table 2: The inhibition capacities of Bio.Me™ Femme UT towards Escherichia coli, C. albicans, S. aureus and P. aeruginosa

References

1. Andersen TE et al. Escherichia coli uropathogenesis in vitro: invasion, cellular escape, and secondary infection analyzed in a human bladder cell infection model. Infect Immun. 2012;80(5):1858–1867.
2. Bao Y, Al KF, Chanyi RM, et al. Questions and challenges associated with studying the microbiome of the urinary tract. Ann Transl Med 2017;5:33.
3. Brubaker L, Wolfe A. The urinary microbiota: a paradigm shift for bladder disorders? Curr Opin Obstet Gynecol 2016;28:407–12.
4. Pearce MM, Zilliox MJ, Rosenfeld AB, et al. The female urinary microbiome in urgency urinary incontinence. Am J Obstet Gynecol 2015;213:347 e1–11.
5. Whiteside SA, Razvi H, Dave S, Reid G, Burton JP. The microbiome of the urinary tract—a role beyond infection. Nat Rev Urol 2015;12:81–90.
6. Flores-Mireles AL, Walker JN, Caparon M, Hultgren SJ. Urinary tract infections: epidemiology, mechanisms of infection and treatment options. Nat Rev Microbiol 2015;13:269–84.
7. Mehnert-Kay SA. Diagnosis and management of uncomplicated urinary tract infections. Am Fam Physician 2005;72:451–6.
8. Nielubowicz GR, Mobley HL. Host–pathogen interactions in urinary tract infection. Nat Rev Urol 2010;7:430–41.