**Probiotics in the treatment of vulvovaginal candidiasis**

**Imbalances of vaginal micro-flora may give rise to vulvovaginal candidiasis (VVC).** This critical review by John Roche and Brian Isbell assesses if probiotics are effective in treating VVC.

The Vagina is a complex microbiological ecosystem. More than 50 different species of bacteria have been recovered from the vaginal tract. These species do not exist independently but continually interact with one another. The Lactobacilli species are reported to be the dominant micro-flora in the vagina. The balance of the vaginal micro-flora is thought to play a key role in the maintenance of vaginal health including an ability to exclude non-indigenous bacteria and maintain homeostasis. The mechanisms behind this are thought to include physical exclusion of pathogenic bacteria, competition for micronutrients, modulation of the vaginal pH and the production of bacteriostatic and bactericidal compounds such as hydrogen peroxide.

A number of factors are thought to disturb the balance of vaginal micro-flora, including repeated antibiotic use, hormonal imbalances, chronic stress and a processed diet. Opportunistic pathogens, such as the yeast Candida, may take advantage of this change in the vaginal environment. Although Candida is commonly found in the intestine and vagina of healthy individuals without symptoms, the Candida albicans strain is responsible for about 90 per cent of vaginal yeast infections. Vulvovaginal Candidiasis (VVC) affects 75 per cent of sexually active women at least once in their lifetime. It is reported that five per cent of females who have suffered an acute infection of VVC will experience a recurrence. The mainstay of conventional treatment for VVC is antifungal medication. However, this appears to be unsuccessful in preventing recurring infections. The participants returned negative Candida cultures. At the end of the trial four of the five participants returned negative Candida cultures. A second study using some of the same strains, such as Lactobacillus rhamnous, L. delbrueckii, L. acidophilus and Streptococcus thermophilus could prevent antibiotic-associated VVC. They concluded that both interventions were ineffective. A second study using some of the same strains, such as Lactobacillus rhamnous, had a different outcome. Prior to the trial five women had significant Candida cultures. At the end of the trial four of the five participants returned negative Candida cultures. The participants...
also experienced a reduction in physical symptoms such as itching. Because the study was not blind it is difficult to say if the outcome was biased. A third study used both suppositories and oral supplementation of *Lactobacilli acidophilus* to treat VVC. The findings suggest that vaginal suppositories were effective in the prevention of VVC. However, it was acknowledged that the results should be cautiously interpreted due to the small size and demographic nature of the sample population.

**Dosage**

Dosage was an important factor highlighted by these studies. For example, Metts et al found no difference between the rates of VVC infection in the first three months of their study. But in the second three months the infection rates reduced significantly. In the Pirotta et al study participants were instructed to use their intervention nightly. Their findings were negative. Hilton et al instructed the suppository to be used twice daily and the results were positive. Witt et al (2009) concluded that *Lactobacilli gasseri* combined with the antifungal medication itraconazole did not add any benefit to the treatment of recurring VVC. However, the probiotic intervention used was extremely low. Participants were instructed to take six probiotic tablets monthly. Therefore, it is possible that if a probiotic is to be considered effective it must be given time to establish itself in the vagina. The literature suggests that 14-28 days should be efficient. Secondly, a daily dosage of at least 800 million live bacteria is considered necessary to have an effect. A higher dosage should allow a sufficient level of bacteria to survive the journey through the gastrointestinal tract. Martinez et al completed a similar study, and found *Lactobacilli rhamnous GR* and *Lactobacilli reuteri RC* combined with an antifungal medication was effective in reducing VVC rates. A similar study was also conducted by Anukam et al, and their findings suggest that *L. ramous GR-1* and *L. reuteri RC-14* have a role to play in preventing VVC recurrence. It is significant to note that through the use of modern DNA methods Ankuam et al (2009) and Martinez et al (2008) supported the findings of earlier studies. Probiotic bacteria can effectively survive the gastric juices and reach the vagina via oral consumption.

**The implications of recent findings**

As scientific methods progress our knowledge continues to evolve in relation to understanding of the vaginal ecosystem. It appears it is more unique and diverse than once thought and the generic prescription of probiotics may prove to be unreliable. Because the study was not blind it is difficult to say if the outcome was biased. A third study used both suppositories and oral supplementation of *Lactobacilli acidophilus* to treat VVC. The findings suggest that vaginal suppositories were effective in the prevention of VVC. However, it was acknowledged that the results should be cautiously interpreted due to the small size and demographic nature of the sample population.

**Implications for Naturopathic Practice**

Naturopathic approaches to dietary therapy that may provide relief include:

1. Reduce/remove processed foods such as refined carbohydrates as they may contribute to dysbiosis in the lower bowel.
2. Increase intake of whole-grains, fruits and vegetables as dietary fibre is a major food source of the dominant bacteria of the lower intestine bifidobacteria. Bifidobacteria are thought to suppress and compete with Candida in the lower bowel.

This research shows that a broad-spectrum probiotic either in...
supplement or yogurt form combined with a natural antifungal and local suppository applications could prove to be more effective than single strained supplements. Single strained Lactobacilli supplements may fail to suppress the source of a recurring VVC infection in the large intestine. Secondly, due to the uniqueness of each individual’s microflora a single-strained supplement such as L. acidophilus may simply be ineffective. Lastly, the intervention used should contain significant quantities of bacteria and be consumed for an appropriate length of time.

References:

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