

# Probiotics In Recurrent UTIs: Collective Information on Commercially Available Products

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## Background

- Probiotics consist of live micro-organisms that can improve patient wellbeing. The mechanism of action of probiotics includes mucosal barrier maintenance, resistance to colonization, and inactivating bacterial toxins and virulence factors<sup>1</sup>
- Emergence of multi-drug resistant organisms has stimulated interest in non-antibiotic methods for prevention of urinary tract infection (UTI), such as probiotics<sup>2</sup>
- Probiotics have become increasingly popular. Between 2007 and 2012, the number of Americans taking a probiotic supplement increased four-fold to nearly 3 million adults and 294,000 children for different indications including UTI

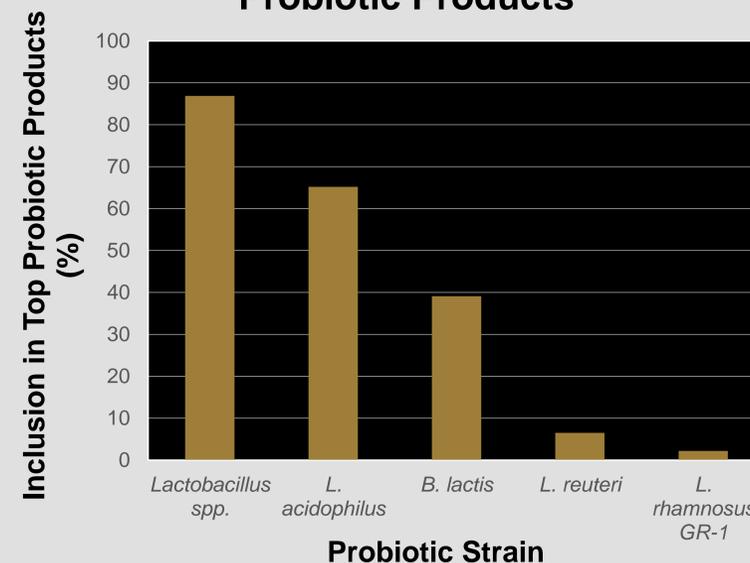
## Methods

- Due to the increase in popularity and use of probiotic supplements, we reviewed the literature on probiotic efficacy and adverse effects in recurrent UTI and the available products on the market in order to help urologists to discuss probiotics with their patients
- We identified the most popular 40 probiotics on Amazon.com (as of October 2017) and generic products from Walmart, CVS, and Walgreens, the 3 most popular pharmacies in the USA
- For each probiotic we reviewed the strains they contain, colony forming units (CFUs), indications, target demographic, and monthly cost
- We compared the strains found in the probiotic products to the strains shown to have some efficacy in the literature

## Results

- A total of 46 products were identified:
  - 40/46 (86.9%) contained *Lactobacillus spp*
  - 30/46 (65.2%) contained *Lactobacillus acidophilus*
  - 18/46 (39.1%) contained *Bifidobacterium lactis*
  - 3/46 (6.5%) contained *Lactobacillus reuteri*
  - 1/46 (2.2%) product contained *Lactobacillus rhamnosus GR-1*

Probiotic Strains Included in Top 46 Probiotic Products



- Prices ranged from \$1.8/month to \$36.3/month, with an average cost of \$14.85/month
- The dose of the probiotics ranged from 0.1 billion CFUs to 50 billion CFUs, with most being one (36/46) or two (6/46) doses daily, and with a mean dose of 12.1 billion CFUs
- Most products were marketed for GI health (39/46, 84.7%), and immunity (33/46, 71.7%), some were also indicated for vaginal health (5/46, 10.8%) and **genitourinary** wellbeing just in (3/46, 6.5%)

## Conclusions

- Despite contradictory data on the efficacy of probiotics in recurrent UTIs, their consumption is dramatically increasing
- Probiotics have an excellent safety and adverse effect profile
- Most of the commercially available products contain at least *Lactobacilli*, however, fewer contain more specific strains that have some evidence of benefit for recurrent UTI such as *Bifidobacterium lactis*<sup>3</sup>, *Lactobacillus acidophilus*<sup>4</sup>, and especially *Lactobacillus reuteri* and *Lactobacillus rhamnosus GR-1*<sup>5</sup>
- Urologists should advise patients to take probiotics containing more effective strains, and should also consider the cost in their recommendations as it varies widely, especially because most probiotics are taken indefinitely

### Probiotics Containing Effective Strains for recurrent UTI

Product	Strains	CFUs	Price/month
Hyperbiotics PRO-15 Probiotics	<i>Lactobacillus spp.</i> , <i>Lactobacillus acidophilus</i> , <i>Bifidobacterium lactis</i> , <i>Lactobacillus reuteri</i>	5	\$12.30
Rephresh Pro-B Probiotic Feminine Supplement	<i>Lactobacillus spp.</i> , <i>Lactobacillus rhamnosus GR-1</i> , <i>Lactobacillus reuteri</i>	5	\$18.90
PRO-Women: Probiotics for Women	<i>Lactobacillus spp.</i> , <i>Lactobacillus acidophilus</i> , <i>Lactobacillus reuteri</i>	5	\$21.90

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