

RGH Pharmacy E-Bulletin

Volume 28 (8): December 10, 2007

A joint initiative of the Patient Services Section and the Drug and Therapeutics Information Service of the Pharmacy Department, Repatriation General Hospital, Daw Park, South Australia. The RGH Pharmacy E-Bulletin is distributed in electronic format on a weekly basis, and aims to present concise, factual information on issues of current interest in therapeutics, drug safety and cost-effective use of medications.

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Probiotics for the prevention of antibiotic-associated diarrhoea

Probiotics include food products and other supplements and preparations that contain living micro-organisms, which when administered in adequate amounts may confer a beneficial effect to the host. Diarrhoea is a common complication of antimicrobial therapy: it is thought that disruption of the normal enteral flora that is associated with some antibiotics leads to overgrowth of opportunistic pathogens that can cause diarrhoea. Probiotics are thought to help restore the microbial balance in the intestinal tract.

The findings from a recent meta-analysis show that some probiotics significantly reduce the development of antibiotic associated diarrhoea (AAD). There are various different preparations of probiotics that are available but very few have evidence of effectiveness supported by controlled trials.

In a recent randomised, double-blind placebo-controlled trial, 135 patients (mean age 74 years) from three hospitals who received a new course of antibiotics were randomised to receive either a probiotic yoghurt or a longlife, sterile milkshake. The probiotic drink (Actime!® made by Danone in France) contained *Lactobacillus casei* at a concentration of 1×10^8 colony forming units/mL, *Streptococcus thermophilus* (1×10^8 cfu/mL) and *Lactobacillus bulgaricus* (1×10^7 cfu/mL). Patients began the drinks within 48 hours of starting antibiotic therapy and continued until one week after they ceased the antibiotics. Patients treated with high-risk antibiotics (e.g. clindamycin, cephalosporins and aminopenicillins) were excluded from the trial. Patients were followed for an additional four weeks for the development of AAD or *Clostridium difficile* diarrhoea. There were significantly fewer cases of antibiotic associated diarrhoea for patients given the probiotic compared to placebo: 12% of the probiotic group developed AAD compared to 34% in the placebo group. The absolute risk reduction was 21.6% and the number needed to treat was five. The probiotic drink also seemed to prevent *C. difficile* associated diarrhoea.

The authors concluded that routine use of this probiotic for all patients over the age of fifty who receive antibiotics has the potential to reduce morbidity, healthcare costs and mortality, but subsequent commentary has raised questions about the generalisability of the results. For example, it was necessary to screen 1760 possible study participants over a two-year period to recruit the final cohort of 135 participants, and thus results should probably not be extrapolated to the “routine” preventative use of probiotics to avert AAD. The use of sterile milkshake for the placebo group may not have been suitable, as milk products themselves may worsen diarrhoea in susceptible individuals. Moreover, it was not possible to establish which of the three bacterial species in the trial product was useful.

Probiotics to prevent antibiotic associated diarrhoea may be useful in patients who have chronic medical conditions and/or have repeated courses of antibiotics. Further research is probably needed to determine the most beneficial type/strain of probiotic to be used. Even so, these products are generally regarded as relatively safe to use, although not for immunocompromised patients.

Acknowledgment – This E-Bulletin is based on work by Irene Heng, Senior Pharmacist, RGH

FOR FURTHER INFORMATION – CONTACT THE PHARMACY DEPARTMENT ON 82751763 or email: chris.alderman@rgh.sa.gov.au
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