

Starting the use of probiotics in general practice?

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John Tagg is a Professor in the Department of Microbiology and Immunology at the University of Otago. Much of his research career has focussed upon prevention of streptococcal diseases by using non pathogenic commensal bacteria.

Introducing relatively-harmless microorganisms to humans to either enhance resistance to or treat infection dates back to the very origins of microbiology. In 1877, Louis Pasteur noted suppression of anthrax bacillus growth in co-cultures with 'common bacilli' and commented that *'these facts perhaps justify the highest hopes for therapeutics'*. There followed attempts by physicians to afford protection against diseases such as tuberculosis, anthrax and diphtheria by dosing their patients with putatively-innocuous commensal bacteria. However, except for the treatment of minor ailments or as supplemental therapy, the application of so-called bacteriotherapy was largely discontinued upon the spectacular advent of the antibiotics. For a time it seems both physicians and the public at large became rather complacent about our potential bacterial adversaries. However, within the span of a single human generation many bacterial species adapted to their now antibiotic-laced ecosystems and variants flourished that are capable of resisting our most potent designer antimicrobials. This dilemma may perhaps increasingly encourage us to reconsider the approach of Pasteur:

that bacteria themselves could prove to be our most effective allies as we continue to confront that relatively small but resilient band of miscreant microbes capable of causing infections of man and other animals.¹

Probiotics, as defined by the World Health Organization are *'Live microorganisms which when administered in adequate amounts confer a health benefit on the host'*. Ever since probiotics were kick-started into prominence by the Nobel prize winner, Eli Metchnikoff, the practice of regular ingestion of intestinal commensal bacterium (especially lactobacilli) to confer health-promoting benefits has been in common use by humans.² In general, however, probiotic principles have not been widely applied to the specific protection of our other body surfaces against bacterial infection. All of the accessible surfaces

of the skin, oral cavity, upper respiratory tract, intestinal tract and vagina of humans are colonised by microbes soon after birth. Collectively known as the normal microflora or indigenous microbiota, these microbes are the body's first line of defence – our personal army of protectors – with a keen interest in our well-being, since our healthy tissues constitute their preferred homeland. However, when less desirable bacteria become common constituents of the normal microbiota they may have

a profound influence on human health from dental caries to coronary heart disease.³⁻⁹

The basis of replacement therapy is the implantation of relatively-innocuous 'effector' bacteria that are somehow able to competitively exclude or prevent the outgrowth of potentially disease-causing bacteria. Individual bacterial members of our indigenous microbiota are actively engaged in an on-going battle to prevent colonisation and overgrowth of their terrain by competing microbes, some of which may have heightened pathogenic potential for the host. Humans have long attempted to intervene in these bacterial interactions. Probiotic bacteria, particularly lactobacilli and bifidobacteria, are commonly taken orally to promote a well-balanced intestinal microflora. Whilst current

intestinal probiotics have been shown to reduce the severity of various inflammatory intestinal diseases and other ailments, they also have other more common uses such as reducing the

severity of, or preventing diarrhoea caused by infectious microbes or more commonly following the taking of antibiotics.¹⁰⁻¹²

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the market have little science behind them and some have erroneous health claims.¹³⁻¹⁵ Additionally, there have been a number of products (especially distributed by some Internet vendors) which are of dubious quality with regards to the viability and correct identification of the organisms they contain.^{13,14} However, from a brief personal survey of probiotic preparations on the shelves of New Zealand pharmacies, it appears that there are various high quality preparations available. There are also probiotics available in other food-related stores

and in certain dairy products. Consumers should check the packaging to see if the scientific name of the organism is listed and the numbers of viable bacteria anticipated to be present in the product up to the date of expiry (not just at time of manufacture). To be clinically effective in the intestinal tract probiotic preparations should contain greater than 10 000 000 (1×10^7) organisms per gram.¹⁶ Whilst supplemental support of antibiotics was not exactly Pasteur's original vision for bacteriotherapy, reducing the occurrence of

antibiotic-associated diarrhoea with a simple dose of probiotics nevertheless appears to be a highly commendable benefit of the application of bacteriotherapy.

Competing interest

John R Tagg is a scientific consultant to the University spin-off company BLIS Technologies Ltd that was formed in 2000 to commercialise probiotic bacterial strains. In this article he does not specifically discuss any commercial, investigational or unlabelled uses of BLIS products.

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Health care for patients with intellectual disabilities

'The term "intellectual disabilities" (ID) refers to the condition of people with disabilities characterized by significant limitations both in cognitive functioning and adaptive behavior (conceptual, social, and practical adaptive skills) that originate before age 18... Adults with ID have expressed a preference to be treated by physicians like their nondisabled peers. However, despite recent summaries of health disparities and health risks for people with ID, few guidelines exist in the literature to help practitioners make decisions about the health of their adult patients with ID, especially when screening for cardiovascular disease and cancer.'

Wilkinson JE, Culpepper L, Cerreto M. Screening tests for adults with intellectual disabilities. J Am Board Fam Med. 2007; 20:399-407.