

Probiotics and The Manipulation of Intestinal Microflora in the ElderlyF
SS - 1**Muftikhar Ahmed², Jaya Prasad¹, Harsharn Gill³, Lesley Stevenson², and Pramod Gopal¹**

¹Fonterra Innovation, Fonterra Co-Operative Group Limited, New Zealand, ²Institute of Food, Nutrition, and Human Health, Massey University, New Zealand, ³Primary Industries Research Victoria, Department of Primary Industries, Australia

Microflora in the adult human body constitute a biomass of over 100,000 billion bacteria comprising of over 400 different species. Though the normal flora displays individual variation it remains quite stable over time. Normal flora provides barrier resistance against invading pathogens as well as stimulates host immune function. Age-related changes in the physiology and intestinal function of the elderly render them more susceptible to gut-related illnesses. Probiotic dietary supplementation has been shown to enhance the health indices in the elderly. Our probiotic strain *Bifidobacterium lactis* DR10 has been shown to be immune modulating (Gill et al. 2000), possess anti-carcinogenic activity (Zhou et al. 2000). Gut flora changes associated with the consumption of this strain have also been described (Gopal et al. 2002). To determine the effect of different probiotic doses on the elderly intestinal flora, a dietary intervention study involving healthy elderly subjects three different doses [5×10^9 CFU/ day (high), 1.0×10^9 CFU/ day (medium), and 6.5×10^7 CFU/ day (low)] of *Bifidobacterium lactis* HN019 (DR10TM) was carried out. This trial was a randomised, double-blind and placebo-controlled human dietary intervention study consisting of four groups of 20 elderly (over 60 years old) volunteers. After dietary intervention, statistically significant increases in bifidobacteria, lactobacilli and enterococci were observed. At the end of the 4-week feeding period the mean number of bifidobacteria recorded in the placebo group were 9.31 ± 0.01 log CFU/ g of faeces. In the high, medium and low dose groups, indicating that even the lowest dose tested augmented the changes in bifidobacteria. Similar trends were observed for lactobacilli and enterococci. In contrast, the counts of enterobacteria were reduced in all the probiotic dose groups. The present study showed that dietary supplementation with *Bifidobacterium lactis* HN019 significantly increased the number of resident bifidobacteria and reduced the enterobacteria counts. In addition, enterococci and lactobacilli were also increased. Based on these studies, *Bifidobacterium lactis* HN019 is an ideal probiotic for elderly human subjects and even the lowest dose (6.5×10^7 CFU/ day) tested has potential to confer desired effects on the intestinal microflora.