

# Identification and antibiotic susceptibility of bacterial isolates from probiotic products available in Italy

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## SUMMARY

This study was carried out to assay the bacterial viability and the probable contamination of a range of probiotic products available in Italy and to test the susceptibility of the isolates.

Eleven dried food supplements and five fermented functional foods were examined using different isolation media under standardized cultivation conditions. The identification was made by conventional phenotypic characteristics and biochemical tests. Among isolates from the probiotic products antibiotic susceptibility was detected using the E-test (ABBIODISK). Our results demonstrate that nine food supplements and two fermented foods claimed species which could not be isolated, whereas potential pathogens (i.e. *Micromonas micros*) were isolated. Lactobacilli displayed species-dependent antibiotic resistance. Atypical resistance occurred for penicillin in *Lactobacillus acidophilus* and *Lactobacillus bulgaricus* and for erythromycin in *Lactobacillus lactis* and *Lactobacillus salivarius*. A broad range of MICs was observed for cephalosporins and fluoroquinolones. Aminoglycosides had poor activity against *Lactobacillus* isolates. Two of the four isolates of *Bifidobacterium* exhibited high resistance to trimethoprim/sulfamethoxazole and to fluoroquinolones.

Our results suggest that some probiotic products claim species that cannot always be isolated, and are sometimes contaminated by potential pathogens. Moreover, the probable transferable erythromycin or penicillin resistance among the lactobacilli isolated should be taken into account.

**KEY WORDS:** Probiotic products, Identification, Antibiotic susceptibility

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## INTRODUCTION

Probiotics are known to play a role in the prevention of treatment of some diseases and are used in both fermented foods and pharmaceutical dietary products (McNaugh and MacFie, 2001; Gorbach, 2002; Owehand *et al.*, 2002). Many reports have provided strong indications

that the functionality of a probiotic strain is linked to some ecologically based requirements. (Guarner and Malagelada, 2003; Lasagno M. *et al.*, 2002; Saarela *et al.*, 2000) Moreover, the safety of probiotics is of great importance as regards pathogenicity, infectivity, intrinsic properties, absence of transferable antibiotic resistance of the bacteria used (Ishibashi and Yamazaki, 2001), stability and viability (Bianchi-Salvatori *et al.*, 2001; Saarela *et al.*, 2000), as well as the correct identity of the incorporated probiotic strains and absence of contaminant bacteria. During the production process the most important factors retain the characteristics of the strain and the prevention of contamination, especially for dried probiotics (Temmerman *et al.*,

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