



Clinical Report—Probiotics and Prebiotics in Pediatrics

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KEY WORDS

probiotics, prebiotics, pediatrics, supplements, nutrition

ABBREVIATIONS

LGG—*Lactobacillus rhamnosus* GG

FOS—fructo-oligosaccharide

IBD—inflammatory bowel disease

RCT—randomized controlled trial

CI—confidence interval

RR—relative risk

OR—odds ratio

NEC—necrotizing enterocolitis

CUC—chronic ulcerative colitis

IBS—irritable bowel syndrome

GOS—galacto-oligosaccharide

FDA—Food and Drug Administration

The guidance in this report does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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www.pediatrics.org/cgi/doi/10.1542/peds.2010-2548

doi:10.1542/peds.2010-2548

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

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abstract

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This clinical report reviews the currently known health benefits of probiotic and prebiotic products, including those added to commercially available infant formula and other food products for use in children. Probiotics are supplements or foods that contain viable microorganisms that cause alterations of the microflora of the host. Use of probiotics has been shown to be modestly effective in randomized clinical trials (RCTs) in (1) treating acute viral gastroenteritis in healthy children; and (2) preventing antibiotic-associated diarrhea in healthy children. There is some evidence that probiotics prevent necrotizing enterocolitis in very low birth weight infants (birth weight between 1000 and 1500 g), but more studies are needed. The results of RCTs in which probiotics were used to treat childhood *Helicobacter pylori* gastritis, irritable bowel syndrome, chronic ulcerative colitis, and infantile colic, as well as in preventing childhood atopy, although encouraging, are preliminary and require further confirmation. Probiotics have not been proven to be beneficial in treating or preventing human cancers or in treating children with Crohn disease. There are also safety concerns with the use of probiotics in infants and children who are immunocompromised, chronically debilitated, or seriously ill with indwelling medical devices.

Prebiotics are supplements or foods that contain a nondigestible food ingredient that selectively stimulates the favorable growth and/or activity of indigenous probiotic bacteria. Human milk contains substantial quantities of prebiotics. There is a paucity of RCTs examining prebiotics in children, although there may be some long-term benefit of prebiotics for the prevention of atopic eczema and common infections in healthy infants. Confirmatory well-designed clinical research studies are necessary. *Pediatrics* 2010;126:1217–1231

INTRODUCTION

Microbes are ubiquitous and are important factors in the overall health of humans as well as the Earth. Efforts to optimize the intestinal microbial milieu have increased the interest in adding probiotics and prebiotics to nutritional products. As with antibiotics, the use and efficacy of probiotics and prebiotics should be supported by evidenced-based medicine. The purpose of this clinical report is to review the medical uses of probiotics and prebiotics and to summarize what is currently known about their health benefits as dietary supplements added to food products marketed to children, including infant formula. The guidance in this report will help pediatric health care providers to make appropriate decisions regard-