For many years, the human large intestine has been perceived merely as an organ involved in storage and excretion of undigested material.

It is now recognised that the human gut flora has a central role in prevention of disease and maintaining good health. There is a delicate balance between the components of the colonic microbiota. Some bacteria are considered beneficial and others harmful.

Diet has considerable impact on microbial populations. There are three approaches for dietary modulation of the gut flora towards a healthier composition, namely probiotics, prebiotics and a combination of pre and probiotics. We here review prebiotics.

DEFINITION OF PREBIOTICS

A prebiotic is a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one, or a limited number, of bacteria in the colon to improve host’s health (1). Intake of prebiotics can significantly modulate the colonic microbiota by increasing the number of specific bacteria and thus changing the composition of the microbiota. Both inulin and oligofructose are potential prebiotics.

THE IMPORTANCE OF THE INTESTINAL FLORA FOR THE INFANT’S HEALTH

The gastrointestinal tract is sterile at birth and the microflora is acquired during delivery and in preceeding days from the mother and the environment. After this first inoculation, the flora changes rapidly, presumably under the influence of diet. In breast fed infants the flora is predominated by Bifidobacteria, possibly caused by oligosaccharides that are present in human milk.

In formula fed infants, the intestinal flora is more complex. When introducing weaning foods, the predominance of Bifidobacteria in the intestinal flora disappears, number of Enterobacteria and Enterococci increase and colonisation with Bacteroides takes place. Finally, the faecal microbiota resembles that of adults and is not dominated by Bifidobacteria anymore by about the second year of life.(1)

The predominance of Bifidobacteria in the infant’s intestine has been linked to a certain resistance to enteric infections. Moreover it has been observed that infections of the respiratory and gastrointestinal tract are less frequent and less severe in breast fed compared to bottle fed infants. Besides the increase of Bifidobacteria, the fermentation of prebiotic oligosaccharides in the intestine results in air increase of bacterial mass and the production of substances like short chain fatty acids and lactic acid. This has positive effects on stool characteristics, translating into relief of constipation. (3)

There has been increasing interest in the concept of adding prebiotics to products, aiming to promote and maintain a healthy digestive system.

References