

## Probiotics and colon cancer

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Colon cancer (CC) is one of the commonest causes of death from cancer worldwide. The development of cancer is a multifactorial process influenced by genetic, physiological, and environmental factors. Regarding environmental factors, the lifestyle, particularly dietary intake, may affect the risk of CC developing. Western diet, rich in animal fat and poor in fiber, is generally associated with an increased risk of colon cancer. Thus, it has been hypothesized that the connection between the diet and CC may be the influence of diet on colon microbiota and bacterial metabolism, both of which involved in the etiology of this disease. Additionally, it has been clearly demonstrated that the gut microbiota may be modulated by many factors including diet. Several studies have indicated that the intestinal microbiota is an important determinant for general health of the human body. Therefore, a beneficial modulation of the composition and metabolic activity of the gut microbiota might represent an interesting approach to improve health, reducing the risk of CC development. This modulation may be thought about probiotic consumption. Even though the mechanisms by which probiotics may inhibit colon cancer are not fully elucidated, certain potential mechanisms have been disclosed, such as the alteration of the composition and the metabolic activities of the intestinal microbiota, the changing physicochemical conditions in the colon, the binding of dietary carcinogens, the production of short chain fatty acids (SCFA), the protection of the colonic mucosa and enhancement of the immune system. The anticarcinogenic effects of probiotic microorganisms *in vitro* and in animal studies are well documented. In clinical trials, the probiotics are thought to play a protective role in the initial process of carcinogenesis. Nevertheless, it is important to determine whether the long-term administration of these microorganisms might result in changes in the incidence of CC in humans. Additionally, there are several challenges for the development of probiotics, including the selection of the appropriate microorganisms, control of dietary intake, time and frequency of probiotic dosing and the use of accepted biomarkers for raised cancer risk that might be monitored during clinical trials. Further experimental models are needed to understand the exact mechanisms involved in the influence of probiotics on colon cancer development. Recent research show some original results, carried out by our research group, about the effect of probiotic *Enterococcus faecium* CRL 183 (strain isolated from Tafi cheese, a homemade traditional cheese of the highlands in the province of Tucumán, Argentina) on intestinal microbiota and colon cancer prevention will be discussed.

## Biography

Upon completion of her doctorate in food technology at the University of São Paulo in 2002, she joined the faculty of Pharmaceutical Science at São Paulo University where she worked with yogurt and probiotics. She has a PhD in molecular biology at the Institut National de la Recherche Agronomique (INRA), France in 2003. She researches the influence of probiotics products and colon cancer prevention (Sivieri et al. 2008, Silva et al. 2009, Sivieri et al. 2011, Benzatti et al., 2011). Now being investigated as *in vitro* gut fermentation models, for evaluation of the impact of potentially new probiotic strains, on gut microbiota function and survival or mechanistic studies on commensal-pathogen interactions (Sivieri et al. 2011). Dr. Sivieri joined the faculty of the Pharmaceutical Science at UNESP in 2009 where she is an Associate Professor.

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