

## The importance of intestinal microbial flora (microbiota) and role of diet

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**Summary.** In this article we want to analyze the function of the intestinal microbial flora. In the intestinal environment microorganisms “good” microorganisms coexist with “bad”. The coexistence between good and bad bacteria is balanced by a mutual action of contrast that has the purpose of maintaining the intestinal microbial flora in a state of equilibrium. This condition is referred eubiosis. This article will attempt to analyze the beneficial role carried out by eubiotic microbial flora showing the negative effects of dysbiosis.

**Key words:** microbiota, dysbiosis, intestinal bowel diseases

In this article we want to analyze the function of the intestinal microbial flora. This, is made up of a myriad of micro-organisms - mainly bacteria - which perform essential functions for the well-being of the digestive system, and not only. In the intestinal environment microorganisms “good” microorganisms coexist with “bad”. The coexistence between good and bad bacteria is balanced by a mutual action of contrast that has the purpose of maintaining the intestinal microbial flora in a state of equilibrium. This condition is referred eubiosis.

The condition of eubiosis is a prerequisite for safeguarding the health of our intestinal mucosa. Today we know that the right proportion between good flora (eubiotic) and bad (enteropathogenic or dysbiotic) is the “conditio sine qua non” for the maintenance of the well-being state. Any change in this delicate relationship leads to the overgrowth of bacteria acting enteropathogenic. The dysbiosis is able to trigger a series of negative effects on the mucosa of the digestive system. This results in the appearance of inflammatory bowel

diseases, which are also capable of damaging organs or systems anatomically distant from the digestive tract.

This article will attempt to analyze the beneficial role carried out by eubiotic microbial flora showing the negative effects of dysbiosis.

At birth, the digestive tract is sterile. This means that it is not colonized by any microbial species. During breastfeeding, the infant assumes for the first time the essential microorganisms that will colonize the various intestinal tracts. These bacteria will remain permanently in our intestines, with individual variables related to lifestyle and the type of feed. In adults it is estimated that there are around 160 different species of bacteria colonies in the colon that reach their maximum concentration ( $10^{13}$  units). It was calculated that the total weight of microorganisms stationed on the intestinal mucosa is about 1.5-2 kg. This film microbial fully coated on the inner wall of the entire digestive tract, takes the name of microbiota.

Today, many researchers consider the microbiota as a real tissue, characterized by its own identity and

microbiological specific functional properties. The microbiota produces a multitude of chemicals (short-chain fatty acid, enzymes, etc) that exert an essential and irreplaceable role for the well-being of the cells lining of our intestines. Furthermore, it strengthens and protects the mucosa of the entire digestive tract from the attack of bacteria and pathogenic substances that might otherwise go to activate cells of the immune system that are positioned inside of the mucosa, triggering real inflammatory profiles.

As a result of special circumstances, such as the assumption of prolonged antibiotic therapy, immunosuppression and stress, poor eating habits, combined with low physical activity, the microbiota undergoes changes of order / quantity changing to dysbiosis. In this case it alters the intestinal microbial balance. The enteropathogenic bacteria take over the healthy bacteria accumulate on the mucosa of our intestines and exert a constant and progressive action detrimental pro-inflammatory. Basically, dysbiosis alerts the immune "sentinel" localized ubiquitously on our digestive tract mucosa (GALT: Gut Associated Lymphoid Tissue), enabling the biochemical reaction evidence that will support the inflammation.

Among the inflammatory bowel diseases, the best known are Crohn's disease and ulcerative colitis. These are also called chronic-recurring inflammatory diseases. Patients who suffer from it have a history characterized by periods of acute symptom alternated with periods of relative prosperity (defined period of clinical remission) The singularity of these diseases is that they tend to flare up during season changes.

The epidemiological study of these diseases indicates that these are more prevalent in countries with different rate of industrialization, while in the less developed geographical areas appear almost unknown. This has led researchers to believe that a causal role is carried out by the customs of life particularly stressor. Western countries and poor diet low in fiber along with a sedentary lifestyle.

Indeed, we do not know fully the causes that lead to the disease, but lately some data begins to emerge. We know that the inflammatory bowel diseases (Crohn's disease, ulcerative colitis, Indeterminate colitis), hold a multifactorial etiology. In some of our genes have been identified specific nucleotide sequences associated with onset of illness.

In addition to this, it finds increasing confirms the causal role played by the variations of the intestinal microbial flora. The microbiota is significantly influenced by the eating habits of the individual. The high-fiber diet is the essential condition for the rooting and growth of proper microbial flora. In contrast, a diet rich in fat and protein and free of slag promotes enteropathogenic microbial flora.

This holds a characteristic putrefactive metabolism which leads to the formation of gas. This is the basis of distension of bowel loops, and then the symptomatic chain characterized by excessive flatulence, bloating, abdominal discomfort, and colic. Moreover, the flora enteropathogenic is able to penetrate below the cells lining the intestinal walls going to activate the mucosal immune system GALT. From here you activate the immune reaction and triggers the inflammation.

Today we know that maintaining a proper microbial flora is essential for our well-being. For some time, researchers are focusing their studies on the effects of enteropathogenic flora in our digestive system and the whole body. Dysbiosis – as a result of the activation of the biohumoral inflammatory response biohumoral – is guilty of multiple extra-intestinal manifestations, that apparently have nothing to do with our digestive system. Some forms of skin diseases (dermatitis, alopecia), musculoskeletal (arthritis), autoimmune diseases (thyroiditis, pancreatitis), and also mood disorders (irritability, depression) can be "incredibly" be the clinical manifestation of a hidden intestinal dysbiosis. But there's more; today we tend to correlate the microbiota not only with inflammatory bowel disease but also with the onset of tumors. Genetic studies show us unequivocally that the chemical mediators of inflammation are able to induce genomic alterations on nuclear DNA of cells by inducing the carcinogenic transformation.

Nowadays, we are aware of the real importance of keeping our intestines proper and balanced microbial flora. The recognition of the beneficial role played by the microbiota led research institutes around the world (universities, private research centers, pharmaceutical companies) to study substances to microbiologically active probiotic, designed to regularize the intestinal microbial flora. For example, yogurt, thanks

to its live lactic acid bacteria exerts a positive modulating action on our microbiota. The lactic however, have a limitation. Their life is very short; so if we want to enjoy an effective eubiotic result we hire them daily. To overcome this, the pharmaceutical industry is commercializing preparation (mainly tablets) based on microorganisms that once ingested, effectively and permanently colonize the intestinal mucosa, exerting beneficial effects of nutrition and even inflammatory. The intake of a proper mixture probiotiocca can then counter with a mechanism of competitiveness, enteropathogenic flora harmful. Some studies conducted by prestigious universities and research institutes and published in leading international scientific journals, have allowed us to demonstrate that probiotics, are able to implement the pharmacological effects of the drugs we commonly use to treat Crohn's disease and ulcerative colitis. Patients in drug treatment with 5-aminosalicylic acid or cortisone show a reduction in clinical manifestations of disease if they take the same appropriate probiotic mixtures. Probiotics contribute actively to boost the action of anti-inflammatory drug therapy traditional.

## Conclusion

What conclusions to draw from this article? The high-fiber diet and a moderate intake of fats and proteins, proper and regular lifestyle (constant physical activity) are the essential elements for the maintenance of proper intestinal flora. This has positive effects not only for the well-being of our intestines but for the whole organism.

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