THE MICROBIOMA

# “The bowel is the second brain”

We live with bacteria that protect us and help us digest. We live in symbiosis with these bacteria, and from a statistical point of view we are only 10% cell mass, while the other 90% are bacterial strains. About 30 years ago, by culturing bacteria from feces, it was thought that the intestinal flora consisted of between 300-400 of these strains. Today with the change in molecular technique (PCR etc.) that allows us to identify and specify strains, we know that there are plus or minus 15'000 bacteria in a healthy microbiome. However, this figure is found only in tribes or indigenous people. We, with our often hectic lifestyles and our diet, which tends to be poorly varied with too many carbohydrates and refined sugars, are in pretty bad shape in that respect.

Tim Spector, a professor of epidemiology at King's College London, did a study in 2015 forcing his son to eat only fast food for a week, after which he analyzed the stool and found a decrease in bacterial strains of about 50 percent. This study confirms how sensitive our microbiome is and how fast it responds to changes, for example, to foods and pollutants that have a particularly detrimental effect on our microbiome, so over time the gut flora undergoes a change that is not in our favor and over time will lead to various ailments and symptoms, reducing our vitality or in other words draining our batteries.

The genome is the program of cellular activity. Our genome consists of 22 genes that are relatively stable and do not change from one day to the next. In contrast, bacteria can react much faster to changes. Let's do a quick calculation: if we had 15'000 bacteria, we would have 3 million genes in our gut flora; they are responsible for our digestion and form the basis for a healthy and competent immune system. In the case of an antibiotic administration, already after 6 hours the first bacteria have mutated and adapted to the new conditions of their environment. Therefore, as a result, our ability to adapt to new conditions depends greatly on the gut flora with its diversity of bacteria. These bacteria form a protective film of the intestine to prevent certain substances from being absorbed; they are also involved in the last stage of our digestion and without them essential nutrients are not sufficiently absorbed. Simply put, the composition and viability of the microbiome is critical.

If we do a microbiome analysis nowadays, especially in patients with chronic diseases or chronic inflammatory processes, we almost always find altered gut flora; especially the protective bacteria are diminished or even absent. Our microbiome is altered not only in the quantity of bacterial strains, but also in their diversity. Our diet and behavior have led to a decrease in certain strains while also reducing the diversity of the microbiome; these alterations are mainly due to the fact that we always eat the same things. About 200,000 edible plants would be found on earth, however, on average we eat only 12 plants. Therefore, we need to think of a way how to restore and regenerate our microbiome. One possibility would be to eat fermented foods. But the problem with our diet is that good fermented foods hardly exist anymore or if we do eat them, they are often pasteurized, such as sauerkraut. However, non-pasteurized sauerkraut or fermented vegetables are a possible option to promote the regeneration of gut bacteria, respectively, and this is the important thing, to create a favorable gut environment for these good bacteria with the goal that they survive; because for us, unfortunately, it is impossible to cultivate 15,000 bacterial strains and ingest them as probiotics; we do not have the possibilities of a laboratory at our disposal, however, we can raise a few strains and-as just mentioned-create a favorable environment for these good bacteria so that the others will be attracted, and this happens with probiotic administration. Another possibility is to eat more varied and especially not too sterile, to swallow the good bacteria found for example on the ground or everywhere in nature. Our hygiene, exaggerated in certain areas, has influenced and is still influencing in no small way and consequently reducing the amount of bacteria in our microbiome. Therefore, we need to take care of a varied and diverse diet with some fermented and non-pasteurized foods and eat plenty of fiber; even if we are unable to digest fiber, they are the nourishment for the bacteria. In addition, the effect of fiber can be enhanced when probiotics, that is, good bacteria, are added. The apposite fibers, so-called prebiotics, then help the good bacteria, which are often lacking, to stabilize the intestinal flora. As our exposure to toxins, pesticides and pollutants constantly takes a toll on our microbiome, it is also recommended to administer these prebiotics and probiotics on a daily basis; adding a small amount of probiotics on a daily basis for the long term is much more effective than a short-term treatment with a high concentration of probiotics; however, the latter is advisable in addition after an antibiotic treatment. Especially the most sensitive bacteria that form a kind of protective film of the intestinal mucosa are almost always affected. So, in summary, it is recommended to administer the right prebiotics that were effective and healthy for specific strains of bacteria.

Although studies have been done that do not show a change in gut flora after administration of individual lactobacilli or bifidobacteria following antibiotic treatment, there is now scientific evidence that the administration of a mixture of probiotics has an effect on both the microbiome environment and our health status. For example, there are interesting studies in patients with an irritable colon that showed marked improvement after administration of prebiotics and probiotics. Then, there are additional studies that have found an improvement in bone density in patients with osteoporosis, as well as a positive change in patients with dementia or depression. One study done with mice that were locked in a cage and had to overcome a difficult course, showed that mice that received probiotics first, were much bolder and braver in comparison to mice with less healthy nutrition.

Inoltre, si nota che i batteri nel nostro intestino hanno un effetto diretto sul nostro cervello; questo legame diretto viene stabilito con il nervo vago, quindi il nostro microbioma influisce in modo non indifferente i nostri pensieri e le nostre decisioni. In this context, issues such as burnout, depression or chronic fatigue take over, which can be positively influenced with a daily administration of a mixture of specific probiotics and prebiotics respectively with gut care. This shows us how important symbiosis is in our body with the bacteria we harbor in our microbiome.

To enhance the effect and to promote a fruitful soil for the intestinal flora, it is advisable to have an intestinal cure once a year for a period of three weeks during which we ingest a series of 10 bacterial strains in sufficiently high dosage clean and restore our microbiome; this cure promotes an interaction of the bacteria with each other, that is, they feed each other with their metabolism to improve the climate for other bacteria that can then colonize our intestines. This is the secret of the complex interaction of modern probiotic mixtures that has been shown to be effective in various studies with a change in the environment of the microbiome. Various studies have identified the most important strains, and as a result, mixtures have been created, the administration of which contributes to a favorable environment for all the bacteria residing in our intestines.

This environment is of fundamental importance, and it is very interesting because it is passed on from mother during birth by natural means, so the baby inherits its intestinal flora from mother in a certain way. During passage, the baby inhales the vaginal secretion and thereafter is, so to speak, inoculated by the bacteria that will colonize its intestines. This basic inoculation usually remains and determines our nutrition. There are people who have a microbiome with good assimilators who absorb nutrients well, while others have a microbiome with bad assimilators and subsequently can eat anything without gaining weight. There are therapeutic approaches that do a microbiome transplant, that is, bacteria from a thin person are inoculated into an obese person's gut endoscopically with the goal that the latter will lose weight due to worse assimilators. Another interesting aspect is when one quits smoking and gains weight despite an unchanged diet, on average 3 kg for the European and 6 kg for the American; this is because smoking and certain substances destroy certain good assimilators, so when they quit smoking they again begin to expand and assimilate better despite an unchanged diet in comparison to before, so the doors for food assimilation are opened.

*Translation of a German summary by Dr Frank Oberle (anesthesia specialist, complementary physician and health coach)*