

"But there is every reason to believe that adding Triphala and these probiotics to the diet is a guarantee of longevity and health."

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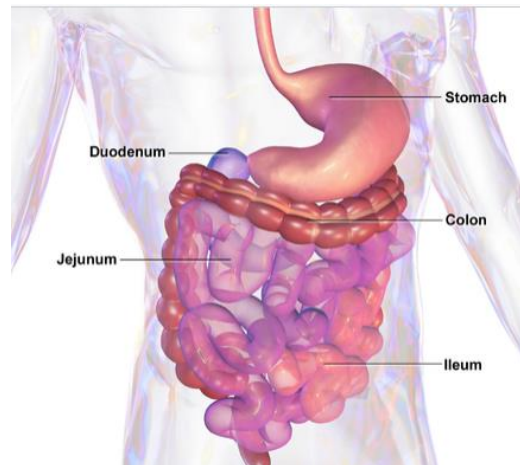
Theme of the month: Microbiome and healthy longevity

Introduction

Our body is made up of complex, fascinating, interdependent and changing systems.

All of them vary throughout the ages of life and, unfortunately, gradually deteriorate.

The digestive system is the one that most directly confronts the outside world, the most changing, hostile and dangerous environment.



Every year, nearly a ton of food and drink, but also kilos of medicines, non-nutritive substances and millions of billions of bacteria, viruses and parasites pass through it and sometimes settle in it. As humans are omnivores, the diversity is particularly great. This is one of the reasons why research approaches to longevity are also diverse.

The importance of the gut microbiota

Our body is home to many different bacterial species. These communities of microorganisms, called "[microbiota](#)", take up residence in different parts of our body: the mouth, the skin, the vagina... But above all the intestine! This organ, which is about 8 meters long, is home to up to 100,000 billion bacteria, mainly located in the small intestine and the colon. Scientists estimate that nearly 90% of fecal matter is made up of bacteria!

These bacteria, associated with other microorganisms such as viruses and yeasts, form the intestinal flora, now renamed "[gut microbiota](#)" by the scientific community.

In utero, the fetal digestive tract remains a sterile environment. During birth, breastfeeding and dietary diversification, the intestinal microbiota of an individual builds up over the years, until it contains nearly 1,000 different bacterial species in a healthy adult. A bacterial world that weighs nearly 2 kilos.

The 200 million neurons of the digestive tract

The same neurons as those in our brain line our digestive tract, [some people call it a "second brain"](#)!

The primary function of the *enteric* nervous system is to ensure the motor function of the intestine. The nerve cells are also responsible for transmitting information from our intestine to our brain. In addition, like the brain, the neurons of the intestine are able to produce hormones and neurotransmitters.

Our emotions are also lodged in our intestines. Being "*scared to death*" or "*having a knot in your stomach*", "*digesting information*" are expressions that illustrate realities.

[Links between Alzheimer's disease and the microbiome have been established by studies](#). On the other hand, it does not seem that the neurons of the "second brain" suffer from a specific Alzheimer's or neurodegenerative disease, even if the nervous control degrades with age (one of the causes of incontinence in the elderly).

Could the microbiota and the gut be the key to improving longevity?

Recently, variations in the gut microbiota have been associated with age-related phenotypes and probiotics have shown promise in managing the progression of chronic disease.

In a scientific paper published in [Nature](#) in May 2018, researchers highlight a longevity extension in *Drosophila*. By adding a combination of probiotics and a plant-based supplement to the diet of *Drosophila* flies, scientists at McGill University were able to extend their lifespan by 60% and protect them from chronic diseases usually associated with aging.

[In this study](#), novel probiotic and symbiotic formulations were shown, in combination, to extend longevity in male *Drosophila melanogaster* through gut-brain communication mechanisms with implications for chronic disease management.

Longevity in mice

Researchers discover the potential of microbes to slow brain aging

Research from the [APC Microbiome Ireland](#) (APC) [SFI Research Centre at University College Cork](#) (UCC) published in *Nature Aging* presents a new approach to slowing aspects of age-related brain and cognitive deterioration via [gut microbes](#). This research opens up potentially new therapeutic avenues in the form of microbial interventions to slow brain aging and associated cognitive problems.

There is a growing appreciation of the importance of microbes in the gut to all aspects of physiology and medicine. In a [very recent study in mice](#), the authors show that by transplanting microbes from young animals into older animals, they could rejuvenate aspects of brain and immune function.

The researchers explained in the journal [Nature Aging](#), "*The gut microbiota is increasingly recognized as an important regulator of host immunity and brain health. The aging process leads to dramatic alterations in microbiota, which are linked to poorer health and frailty in older populations. Transplantation of microbiota from young donors reversed age-associated differences in peripheral and brain immunity, as well as the hippocampal metabolome and aging transcriptome of recipient mice.*"

Longevity in humans

A recent study by the Institute for Systems Biology (ISB) shows that depending on the type of intestinal microbiota (the composition of the microbial flora that permanently inhabits our intestines), we age in better or worse health. This would therefore have an impact on longevity.

The microbiota changes after age 50

[The researchers analyzed the gut microbiota and health status of more than 9,000 people aged 18 to 101, with a particular focus on the 78+ age group.](#) In the latter group, they found that the microbiota changes in composition as we age and becomes more and more "unique" but that the different microbiota of healthy people all perform similar metabolic functions.

Our bacteria produce anti-aging substances

In correlation, higher concentrations of certain metabolites produced by the microbes in the intestines were measured in the subjects' blood. Thus, it seems that changes in intestinal flora in healthy aging are linked to the production of certain metabolites whose effect on longevity is known, such as [indole](#) for example.

It is known that certain types of intestinal bacteria convert tryptophan (an essential amino acid) into indole, which passes into the bloodstream. It has been shown that indole prolongs life in mice and reduces intestinal inflammatory processes.

Another microbial metabolite, phenylacetyl glutamine, is found in large quantities in the blood of centenarians.

To conclude, it is noted that the microbial flora, continuing to evolve at an advanced age, would make it possible to better preserve health and to improve longevity, it is in relation to the common production of certain metabolites (like the 2 examples quoted previously). These modifications would be done especially after the fifty years.

Changes in microbiota with age

While the composition of our microbiota remains relatively stable during adulthood, changes in diet, even medication (antibiotics, anti-acids, ...), the slowing down of gastrointestinal transit and digestion ... lead to an imbalance of the digestive flora as we age

The diversity of bacterial species tends to decrease with age. [Among other things, there is an increase in enterobacteriaceae and germs that can then become pathogenic by their number, such as streptococci, staphylococci, etc.](#) These develop more easily in an inflammatory environment, and will themselves maintain a localized inflammation, as well as a too great permeability of the intestinal mucous membrane.

[It has been observed in people over 105 years old, an increased presence of certain bacterial families \(akermansia, bifidobacteria and christensenellaceae\).](#) This suggests that this presence appears to favor the control of inflammation and a better maintenance of immunity, in spite of repeated stress and the constant work of defense of a whole life, against foreign microbial elements.

For example, bifidobacteria represent nearly 90% of the bacteria of breast-fed infants, and only 5% at the end of life. Their contribution seems beneficial in several ways in the elderly, according to studies.

It would be possible to define a person's age by studying the composition of their microbiota

Longevity researcher Alex Zhavoronkov and his colleagues from artificial intelligence startup InSilico Medicine [analyzed the DNA of the gut microbiota of healthy people from different countries](#). A total of 1165 people between the ages of 20 and 90 were enrolled in the study and more than 3600 stool samples were collected to study the gut microbiota data and enable the tool to be trained. The machine was able to give the age of the individuals with a margin of error of only 4 years!

Moreover, of the 95 bacterial species studied, 39 of them could predict age. The researchers were also able to show that certain species of bacteria were more abundant as we aged, such as *Eubacterium hallii*, which is associated with a healthy balance of intestinal metabolism; and others, on the contrary, were in smaller quantities, such as *Bacteroides vulgatus*, which is correlated with ulcerative colitis.

What about tomorrow?

So far, very different diets (without excess) and microbiota lead to relatively similar maximum lifespans. A Japanese and a French person have a very different diet, but a similar longevity.

However, further research, particularly the analysis of genetic data from the countless organisms that populate our digestive organs, opens up significant prospects for longevity. Among the leads, those influencing the nervous system are among the most important.

September News

[Aubrey de Grey](#), the world's best known biogerontologist, helped the SENS organization raise \$28 million. Immediately afterwards, on the basis of harassment charges, he was expelled from SENS, among others. However, at the time of writing, none of the thousands of women and men, minors or adults, who have been in public or private contact with him for decades have, to our knowledge, taken legal action. Whatever the media's temptation and the pressure to condemn without procedure, and while

respecting the rights and opinions of everyone, including the alleged victims, we will stick to fundamental human rights: Everyone accused of a criminal act is [presumed innocent until proven guilty in a public trial](#) in which he or she has been given all the guarantees necessary for his or her defense.

American billionaire and philanthropist [Yuri Milner](#) has announced the creation of Altos Labs, a company that aims to make radical advances in human longevity with funding in the hundreds of millions of dollars. Jeff Bezos is [also widely quoted](#) as a co-founder. Renowned scientists specializing in aging research have been recruited or associated, including epigenetic clock specialist [Steve Horvath](#), Nobel laureate [Shinya Yamanaka](#) and Spanish rejuvenation researchers [Juan Carlos Izpisúa Belmonte](#) and [Manuel Serrano](#).

For more information:

- See in particular: heales.org, sens.org, longevityalliance.org and longecity.org.
- [Source of the image](#).