**GUT-BRAIN AXIS: HOW YOUR MICROBIOTA TALKS TO YOUR BRAIN?**

**DEFINITION**

The gut-brain axis is a bidirectional communication between the gut and brain, in which gut microbiota plays a key role.

**DID YOU KNOW?**

Your gut is called the second brain: it is lined by more than 100 million neurones.

The brain regulates the activity of the gut and vice versa

- **Top-down**
  - brain to microbiota: by secreting signal molecules
  - brain to gut to microbiota: by modulating the gut physiology (motility, secretion, permeability, microbiota)

- **Bottom-up**
  - microbiota to brain: by producing molecules
  - microbiota to gut to brain: by sending signal through the gut

Information carriers:
- neurons
- immune cells
- hormones
- microbial metabolites

The gut-brain axis could be involved in the development of...

- **Neurodegenerative diseases**
  - Alzheimer’s disease, Parkinson’s disease, multiple sclerosis...

- **Neuropsychiatric diseases**
  - depression & anxiety, schizophrenia, autism spectrum disorder, bipolar disorder, attention deficit/hyperactivity disorder...

- **Gastrointestinal disorders**
  - inflammatory bowel syndrome, disorders of gut-brain interaction: irritable bowel syndrome, functional dyspepsia...

- **Skin diseases**
  - atopic dermatitis, psoriasis, acne...

- **Metabolic diseases**
  - obesity, diabetes...

How to maintain good communication between the gut and the brain?

**Diet**
- probiotics
- prebiotics
- fibers
- healthy diet

**Healthy lifestyle**
- sleep
- environment
- physical activity

**Gut-brain signal management**
- psychotherapeutic interventions
  - Cognitive Behavior Therapy (CBT), hypnosis, psychodynamic, relaxation...

**Under studies**
- Faecal Microbiota Transplantation (FMT)

Research on gut-brain axis is rapidly evolving, don’t hesitate to ask your healthcare professionals about it.

For more information about the microbiota go to

www.biocodexmicrobiotainstitute.com

References on the website

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