

DEM-BIOTA PROJECT

DEMENTIAS AND MICROBIOTA COMPOSITION: MICROBIOTA IN DEMENTIAS. IS POSSIBLE TO REVERT THE DEMENTIA SYMPTOMS REVERTING THE MICROBIOTA COMPOSITION?



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Background

The adult microbiota is relatively stable, but the presence and abundance of bacterial species can vary significantly between individuals and have flexibility to change in response to intrinsic and environmental factors. Recent studies provided evidence that microbiota clearly has effects on CNS and has a neuroinflammatory role in neurodegenerative diseases and dementia. The increased permeability of the gut barrier and BBB induced by dysbiosis may mediate or affect AD pathogenesis and other neurodegenerative disorders, especially those associated with age. As a consequence, it's observed the destruction of gut epithelial barrier, with local and distant immune cells activation, that leads to BBB dysfunctions that trigger neuroinflammatory reactions, predisposing to apoptotic neuronal and glial cell death.

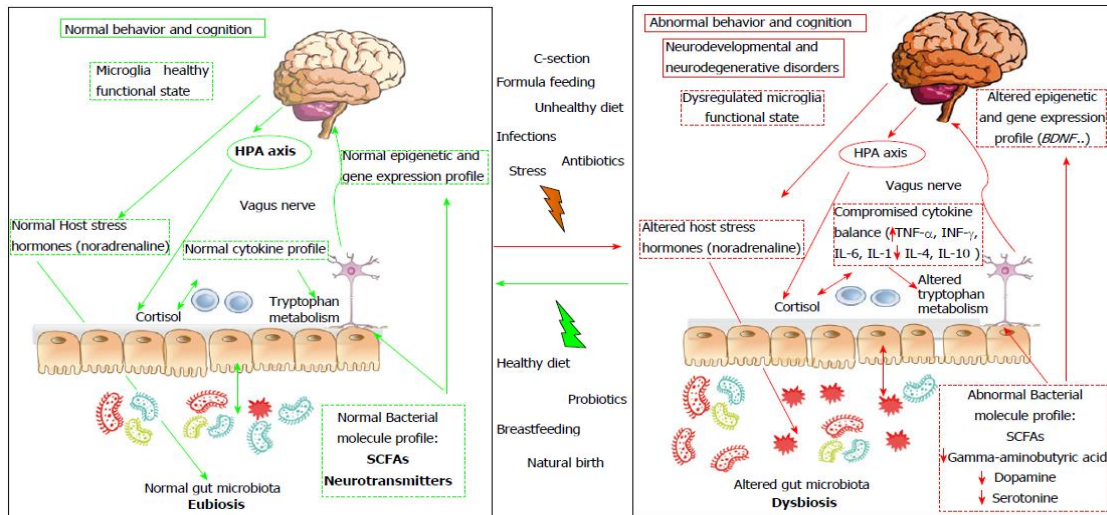


Figure 1. Schematic representation simplified of mechanisms involved in the relationship between microbiota and brain development and function: Cytokine balance and microglia activation (immune pathway), cortisol (endocrine pathway) and vagus and enteric nervous system (neurological pathway). Altered gut microbiota composition enhances the risk of neurodevelopmental and neurodegenerative disorders. HPA: Hypothalamic-pituitary-adrenal (Adapted from Cenit et al, 2017).

Goal

- ✓ Describe differences between dementias in relation to microbiota and characterize them in relation to neurocognitive, neuropsychiatric symptoms and patient functionality (dependency level) as well as identification of the microbiota strains that are risk factor.
- ✓ Study the capacity of a probiotic compound in reverting or improving neurocognitive and neuropsychiatric symptoms and patient functionality.

Expected impact



If only we can delay the symptoms treating the gut microbiota, with a minimum investment we will obtain huge results in economic and societal areas (delay on the residence entrance, increment of quality of life, dependence levels reduction, etc.). The results of this project are potential solutions to the 1st societal challenge and have interesting areas of continuance easily adopted with European countries collaboration.

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