Letter to Editor
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Gut in Mind!

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Letter to Editor

Neuroinflammation plays an important role in the pathogenesis of Autism Spectrum Disorder (ASD) as well as of neurodegenerative diseases [1]. On exposure to lipopolysaccharides, components of the cell wall of gram-negative enterobacteria, some kinds of immune cells are stimulated to produce Reactive Oxygen Species (ROS) and inflammatory cytokines, which may cause the neuroinflammation and then neuronal apoptosis. In this meaning, the gut microbiota has a key role in gut-brain crosstalk and is linked to neuronal disorders. Actually, it has been shown that several mental, neurodegenerative, neuro-behavioural, and neuro-metabolic disorders are linked to the gut microbiota [2]. In addition, the gut microbiota has appeared as an important factor that controls the development of the central nervous system including neurogenesis, myelination, synaptic trimming and blood-brain barrier formation. Defining a precise role for the gut-brain crosstalk in the inflammation may contribute the effective treatment of the neuronal disorders ranging from neurodevelopmental disorders such as ADHD and autism, and to stress-related disorders such as irritable bowel syndrome and depression or anxiety, and to neurodegenerative diseases such as Alzheimer's disease and/or Parkinson Disease.

In general, gut is an anaerobic environment with a diverse enteric microbiota, characterized by more than hundred trillion microorganisms, including at least thousand distinct species [3]. Among them, lactic acid bacteria are sensitive to ROS, which is deficient in both Superoxide Dismutase (SOD) and Catalase (CAT), protectors against ROS, and is thus likely to suffer from various oxidative stresses [4]. On the other hand, intestinal *Ruminococcus albus* has probiotic potential on the protection of oxidative stress and on neuroprotection. Treatment with Ruminococcus albus has reduced the level of ROS in oxidatively stressed conditions [5]. In addition, intake of whole fruits of potential antioxidant-benefits contains protecting irritable bowel syndrome and inflammatory bowel diseases lowering the risk of depression and helping to attenuate autism spectrum disorder severity [6]. As the efficiency of pharmacological treatments against the neuronal disorders has been imperfect at present, dietary choices could indicate a certain role in the neuro-protection for the better treatment of those diseases [7,8].

Figure:

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