

Skin-Gut-Brain Axis: Role in neurodegeneration

Call for papers

The interaction between environment and genetics plays a crucial role in the development of neurodegeneration. Different aspects, however, exist for such relation. One important area of such interaction is microbiota. The skin and gut epithelium provide barrier function between the host and environment, yet they also provide a range of niches for diverse microbial communities, microbiota. The skin and gut microbiota play an increasingly recognized role in immunity, local inflammatory responses and are associated with some chronic inflammatory diseases afflicting diverse organs, e.g. diabetes, kidney, and neurodegenerative diseases. Recently, it has been recognized that the brain-gut axis interactions are significantly modulated by the gut microbiota via immunological, neuroendocrine, and direct neural mechanisms. Dysregulation of the brain-gut-microbiota axis in PD- for example- may be associated with gastrointestinal manifestations frequently preceding motor symptoms, as well as with the pathogenesis of PD itself, supporting the hypothesis that the pathological process is spread from the gut to the brain. Although current evidence suggests that there are alterations of gut microbiota in Parkinson's disease, the exact nature of these changes is not established. More interesting, aspects of this axis has been widened to include a gut-brain-skin. This theory has been further validated via modern scientific investigations. It is evident that gut microbes and oral probiotics could be linked to the skin, by their ability to influence systemic inflammation, oxidative stress, glycaemic control, tissue lipid content, and even mood. Diverse communities of symbiotic bacteria inhabit nearly every surface of the body exposed to the environment. The skin and gut epithelium in particular are in constant contact with the environment and serve a critical barrier function, yet provide niches to inhabiting microbial communities. The term “cutaneous and intestinal microbiome” describes the microbiological flora which colonizes human skin and intestinal tract. Those are composed of bacteria, viruses, and eukaryotes such as fungi and arthropods. Better understanding of the composition of the skin and intestinal microbial community has emerged from the development of methods based on sequencing technologies that are independent of the need for cultivation of microbes. This new information has revealed that the

composition of the microbiota is diverse and varies for different skin and intestinal locations and upon distinct biological circumstances. The genomic approach had also revealed the increased diversity of microbial communities between subjects (beta-diversity), which is highest compared to other epithelial surfaces. There is evidence that the flora may be regulated in a time-, sex-, and medication-dependent manner. A multitude of interactions between the skin and intestinal microbiota, host and environment contribute to community structure over space and time and its potential contribution to changes in health status. Recent landmark studies of the mouse gut and skin microbiota using a quantitative trait locus mapping approach unequivocally demonstrates the role of host genetics in shaping diversity between individuals.

We invite authors to submit original research and review articles that seek to improve our understanding of the link between skin, gut, brain and inflammation in the pathophysiology of neurodegenerative disorders. Potential topics include, but are not limited to:

- Research in mitochondrial function and cellular respiration, reactive oxygen species, and nitric oxide on brain cell viability, and in particular neuronal survival;
- Recent advances on the impact of oxidative stress in neurodegenerative disorders;
- Involvement of excitotoxicity in neurodegeneration and brain cell physiology;
- Role of inflammatory mediators in free radical generation in the brain;
- Recent developments in natural occurring phytochemicals as neurodegenerative diseases therapies.
- Microbiota and brain disorders

Before submission authors should carefully read over the journal's Author Guidelines.

Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System.

Manuscript Due: 1 October 2018

First Round of Reviews: 1 November 2018

Publication Date: January 2019

Guest Topic Editors:

Dr Wael Mohamed,

Menoufia Medical School, Menoufia, Egypt

*International Islamic University Malaysia, Kulliyyah of medicine, Kuantan,
Pahang, Malaysia*

(wmy107@gmail.com)

Dr Mohamed Salama,

Mansura Medical School. Mansura, Egypt (toxicsalam@hotmail.com)