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Interplay between intestinal microbiota and the brain in the promotion of neuroresilience in aging by polyphenols

Polyphenols are a large and diverse group of naturally occurring compounds widely distributed in many plant-derived foods and beverages. There is evidence that polyphenols can be highly metabolized to selective bioactive phenolic acid by the gut microbiome via mechanisms affecting bioavailability through constant interplay between the GI and the brain axis. The notion that intestinal microbiota can influence brain function is clear from clinical support that orally administered antibiotics can reverse brain disease under certain conditions. Therefore, better understanding of the interplay between the intestinal microbiota and the brain in respect to the generation of phenolic acid will provide not only a better understanding of how polyphenols may influence brain health, but will also pave the road for “second-generation” probiotics promoting intestinal microbiota polyphenolic metabolism. Polyphenols may play a potential role in the promotion of resilience in response to stress-induced psychological and cognitive impairment. In particular, preclinical evidence demonstrated the efficacy of certain polyphenols, either individually or in combination, to modulate multiple mechanisms relevant to depression, anxiety and Alzheimer’s disease, implicating the potential for development of polyphenols for novel multi-target engagement. In spite of the increasing efforts through clinical testing of polyphenols, there is limited knowledge of polyphenol bioavailability, specific forms of brain-bioavailable bioactive polyphenols, and their underlying mechanisms of action. The overall goal of this presentation is to briefly discuss “state of the art” development of polyphenols and their eventual translation into the clinical setting with emphasis on host gut microbiota polyphenol metabolism in promoting neuroresilience in aging.

Biography

Giulio Maria Pasinetti is the Saunders Family Chair, Professor of Neurology, Psychiatry and Geriatrics and the Director of the Neurodiagnostic and Neurotherapeutic division of the Friedman Brain Institute at the Icahn School of Medicine at Mount Sinai. He is also the Program Director of the NIH funded P50 Center on Molecular Integrative Neuroresilience which is focused on understanding the molecular mechanisms of stress-induced mood and neuropsychiatric disorders and their influence on cognitive dysfunction. He is the recipient of several academic awards and more than 30 NIH federal, Industry and Non-Profit Organization Research Grants and has published over 300 groundbreaking manuscripts.

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