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BRAIN AND MICROBIAL FLORA: THE ROLE OF GUT MICROBIOTA IN THE GUT-BRAIN AXIS

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The human gut host 10¹⁴ bacterial organisms, an amount that exceeds the cells within the body. Microbiota is the bacteria living both inside and on the human body (a community collectively known as, dwelling in the human microbiome), mostly are friendly, outnumber the somatic and germ cells of the body by a factor of 10. Specific to the human gut is the commensal microflora, that enters into an important symbiotic association with the human host beginning with the colonization of the gastrointestinal (GI) tract by the bacteria within half an hour after delivery and continues to develop depending on many factors, this is developmental process which begins at birth, continues through early development, and remains for life. This developmental processing is actually active during vulnerable or sensitive developmental periods and thus exert influences that impact on the structure and function of organs (brain) that last throughout life. However, although the colonization of microbiota is due to

postnatal environmental factors and is also affected by genetics, it is consistent and is difficult to change after reaching the adult form. It has a pre and post-natal effect on developing infant brain. The microbiota is essential to the proper development of the mucosal and systemic immune systems and in nutrient uptake and metabolism as an important contributors in making the individual's physiology and influence the function of the central nervous system (CNS) and behavior. Of particular interest is the impact on the functional development of the infant (mammalian) brain. The developing brain is susceptible to internal and external cues during its perinatal life, an important point when considering the association between common neurodevelopmental disorders (e.g. autism, schizophrenia) and microbial pathogen infections during this same period. Breast feeding and probiotics are now being recognized in the brain-gut axis interaction .

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