Long-term Health and Longevity through Caloric Restriction and Symbiotic Equilibrium with Gut Microbiome

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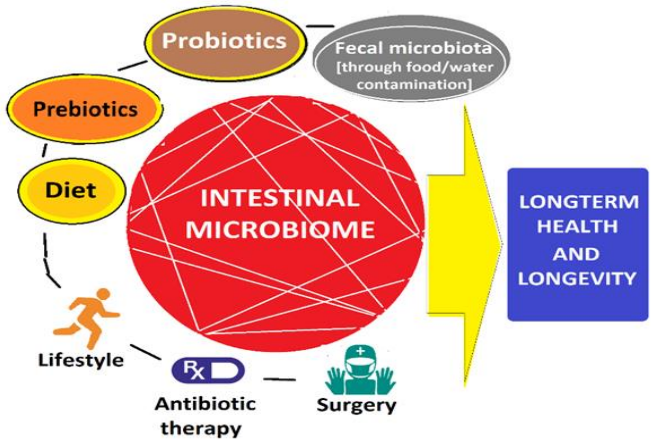
ABSTRACT

CONCEPTS IN HEALTH, LONGEVITY AND MICROBIOME: Prolongation of life span achieved in recent decades is triumph of modern medicine. The lead challenge existing now is to promote healthy life span along with reducing incidence and severity of chronic and degenerative diseases, and morbid frailty associated with later years. Simultaneously, the increasing proportion of older people are now required to be capable of independent living, because of the changes pervading through familial and societal structures.

CALORIC RESTRICTION AND GUT MICROBIOME: There is evidence that optimal CR along with adequate nutrition can reduce adiposity, chronic inflammation and insulin resistance, and promote health and quality of life along with satisfactory level of activity of daily living in older adults. Further, as documented by recent research, the loss of gut microbiota diversity occurs during later years and modulates aging process adversely. The loss of core microbiota diversity with advancing age, has been associated with increased frailty and degenerative diseases along with cognitive deterioration.

GUT MICROBIOTA AND IMMUNOSENESCENCE: Diet-microbiota-health interactions may be viewed in the broader context of the genetic and epigenetic factors. The lifestyle changes including dietary alterations accompanying aging have impact on gut microbiota. Considering the fact that the gut microbiota modulates cardiometabolic and immunological processes, the microbiota alterations with aging process may mean that older adults may experience accelerated aging-related health loss. Further, the age-associated alterations in composition, diversity and functional features of intestinal microbiota have been related to the age-associated decline in immune system functioning (immunosenescence) and low-grade chronic inflammation (inflam-aging), which accompany various aging-associated pathologies. CONCLUSION – SCPOE OF INTERVENTIONS: The gut microbiota has crucial impact on aging process, and as documented by recent studies the microbiota-targeted interventions for normalization of gut microbiota may have health-span-promoting effects. CR with adequate nutrition and microbiota-targeted dietary and probiotic, prebiotic and synbiotic interventions are likely to favourably modulate the host health and aging process by enhancement of antioxidant activity, suppression of chronic inflammation and improvement of immune homeostasis.

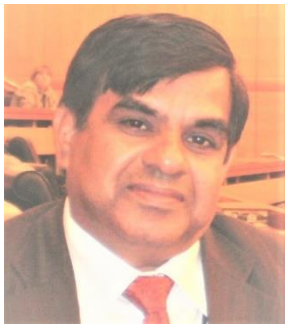
IMAGE



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KEYWORDS: Aging process, Caloric restriction, Chronic degenerative diseases, Cognitive decline, Gut microbiome, Intestinal microbiota, Immunosenescence, Inflam-aging, Longevity, Prebiotic, Probiotic, Synbiotic.



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