

VITAMIN B3 DIETARY INTAKE AND ITS ROLE IN AGING

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Abstract

Organism aging is a process of time and maturation culminating in senescence and death. The molecular details that define and determine aging have been intensely investigated in last decade. The aim of this review is to improve the dietary intake of vitamin B3 (niacin) as an agent that is critical for modulating cellular metabolism, mitochondrial plasticity, longevity, and for influencing cellular life span.

Bibliographical searches were performed in available studies and reports using the following terms: "vitamin B3", "niacin and aging", "mitochondria and aging", "nicotinamide" and "age related diseases".

Nicotinamide, the amide form of niacin (vitamin B3), is the precursor for the coenzyme beta-nicotinamide adenine dinucleotide - NAD(+), and plays a significant role during the enhancement of cell survival as well as cell longevity. Normal intake of Vitamin B3 obtained through diet with: fishes, turkey, avocado, mushrooms and other products, raise the capacity of nicotinamide to govern not only intrinsic cellular integrity, but also extrinsic cellular inflammation rests. This process is proven by modulation of a host of cellular targets that involve mitochondrial membrane potential, poly (ADP-ribose) polymerase (PARP), protein kinase B (Akt), caspases and microglial activation.

Given the wide array of cellular functions regulated by nicotinamide, it becomes critical to elucidate the cellular pathways controlled by this agent. Further insight into the spectrum of cellular processes modulated by nicotinamide should open the space for the future development of new therapeutic strategies for a spectrum of disorders that may involve aging, and age related diseases.

Key words: Aging, Diet, Vitamin B3, Nicotinamide, Mitochondria.