

Abstract

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Diet, nutrition and telomere length.

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BACKGROUND: The ends of human chromosomes are protected by DNA-protein complexes termed telomeres, which prevent the chromosomes from fusing with each other and from being recognized as a double-strand break by DNA repair proteins. Due to the incomplete replication of linear chromosomes by DNA polymerase, telomeric DNA shortens with repeated cell divisions until the telomeres reach a critical length, at which point the cells enter senescence.

DISCUSSION: Telomere length is an indicator of biological aging, and dysfunction of telomeres is linked to age-related pathologies like cardiovascular disease, Parkinson disease, Alzheimer disease and cancer. Telomere length has been shown to be positively associated with nutritional status in human and animal studies.

CONCLUSIONS: Various nutrients influence telomere length potentially through mechanisms that reflect their role in cellular functions including inflammation, oxidative stress, DNA integrity, DNA methylation and activity of telomerase, the enzyme that adds the telomeric repeats to the ends of the newly synthesized DNA.

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