



VASCage

Research Center of Excellence in Vascular Ageing - Tyrol

Programme: COMET – Competence Centers for Excellent Technologies

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Diet rich in spermidine contributes to longevity of humans

The natural polyamine spermidine shows significant life-prolonging effects in cell cultures and various animal models. Within the framework of VASCage, an international team of researchers successfully conducted the first large-scale epidemiological study suggesting that the life-prolonging and anti-aging effects also apply to humans.



Focus: healthy lifespan

Life expectancy is increasing rapidly worldwide. However, part of the years gained are years in illness and disability. The key aim of VASCage is promoting healthy ageing (health span) based on new intriguing insights into vascular health. An important contributor to aging *per se* and many age-related diseases is a decline in the self-purification process of cells - called autophagy. Aged proteins and non-functional cell components are continuously

cleared by autophagy. When this „garbage removal" stops working, cells lose their function. The naturally existing polyamine spermidine restores autophagy function. Many experimental studies have shown that the lifespan of cells and various animals can be prolonged (by up to 30%) through spermidine feeding. It is, however, unclear whether similar effects apply to mankind.



The Bruneck-Study

The Bruneck study, a strategic VAScAge project, makes it possible to study effects of spermidine on the lifespan of humans. Food habits were carefully recorded (qualitatively and quantitatively) over a 20-year period. Actually, the amount of spermidine in the diet of the study participants was inversely associated with the mortality risk. This means that people consuming a diet rich in spermidine faced a lower risk of death during the 20 years of follow-up. Since autophagy plays an important role in most age-related diseases, it was not surprising that positive effects of spermidine applied to deaths from vascular disease as well as cancer and other diseases. These findings are valuable and will find access to nutrition recommendations.



Further developments

Associated partners from the University of Graz are currently studying effects of spermidine supplements on the aging processes in humans. First smaller intervention studies are ongoing. Spermidine is also of particular interest in the context of neurodegenerative diseases such as Alzheimer's dementia for which we have currently limited treatment options. Large-scale experimental and clinical investigations are in progress.



Illustration 1: spermidine-rich food includes whole grains, apples, salad, nuts and matured cheese.

Contact and Information

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University of Innsbruck	Austria
University of Graz (associated partner)	Austria
INSERM (associated partner)	France