Regucalcin may prevent the development of prostate age-related pathologies such as prostate cancer

Regucalcin (RGN) is a protein with a multifunctional role, which regulates the basic biological processes determining cell fate. RGN actions have been implicated in the control of intracellular calcium levels, oxidative stress, cell metabolism, cell death and proliferation, and largely contribute to the maintenance of tissue homeostasis. This protein is also known as senescence marker protein-30 due to its diminished expression in aged animals. On the other hand, the process of aging and the hormonal action of sex steroid androgens are the major risk factors for the development of prostate cancer, one of the most common cancers in men that continues to be a source of considerable morbidity and mortality worldwide. Previously, our research group demonstrated that RGN is a protein under-expressed in human prostate cancer cases and that its expression is negatively regulated by androgens. These findings suggested that the loss of RGN with aging may be an event favoring tumor development. Therefore, we investigated the effect of aging on the expression of RGN in rat prostate, showing that RGN levels are markedly decreased in the prostate of aged rats. Taking into account this result and the above describing findings, we hypothesized that maintaining high expression levels of RGN may have a beneficial effect on age-related alterations in cell physiology. Making use of transgenic animals that overexpress RGN protein we demonstrated that the augmented levels of RGN in the prostate of aged animals improved the antioxidant defenses, increased cell death and prevented the excessive proliferation associated with aging, all processes also commonly deregulated in cases of prostate cancer. The obtained results raised the curiosity about the manipulation of RGN levels as a strategy for the prevention or treatment of aged-associated prostate diseases, as is the case of prostate cancer.

Publication

Aging-associated changes in oxidative stress, cell proliferation, and apoptosis are prevented in the prostate of transgenic rats overexpressing regucalcin.
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