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Is the Val16Ala manganese superoxide dismutase polymorphism associated with the aging process?

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Abstract

Oxidative stress has been related to aging. Recent evidences suggest that a genetic dimorphism that encodes for either alanine or valine in superoxide dismutase (SOD2) is involved with oxidative stress. However, the current literature is still controversial, and the potential role of the Ala16Val polymorphism in human aging needs to be established. Here we investigated the role of the SOD2 polymorphism in: a) age-related mortality, b) morbidity (breast and prostate cancer), c) immunological markers, and d) DNA damage in peripheral blood cells. We did not find an association between SOD2 polymorphisms and mortality. However, the AA genotype was associated with increased risk for prostate and breast cancer, immunosenescence profile, as well as DNA damage. These data suggest that SOD2 presents characteristics that support the free radical theory of aging.

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