

INSULIN IN AGING AND CANCER: ANTIDIABETIC DRUGS AS GEROPROTECTORS AND ANTICARCINOGENS

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Studies in mammals have led to the suggestion that hyperglycemia and hyperinsulinemia are important factors both in aging and in the development of cancer. Insulin/insulin-like growth factor 1 (IGF-1) signaling molecules that have been linked to longevity include DAF-2 and InR and their homologues in mammals, and inactivation of the corresponding genes followed by the increase in life span in nematodes, fruit flies and mice. It is possible that the life-prolonging effect of caloric restriction is due to decreasing IGF-1 levels. A search of pharmacological modulators of insulin/IGF-1 signaling pathway mimetic effects of life span extending mutations or calorie restriction could be a perspective direction in regulation of longevity. Our observations show that antidiabetic drugs (biguanides - phenformin, buformin, metformin) and Diabenol® (9-beta-diethylaminoethyl-2,3-dihydroimidazo-(1,2-alpha) benzimidazol dihydrochloride) increase the on life span and decrease the spontaneous and chemically or irradiation-induced tumor development in rodents.