Effects of glucose insulin perturbations on aging and chronic disorders of aging

Health & Medicine

Effects of Glucose/Insulin Perturbations on Aging and Chronic Disorders of Aging

The paper " Effects of Glucose/Insulin Perturbations on Aging and Chronic Disorders of Aging" is a perfect example of an assignment on medical science. Perhaps the most important change in aging is increased glucose intolerance. The causes are enhanced insulin resistance at the receptor level or disturbances in the post-receptor level. The compromised sensitivity of pancreatic islet beta-cell to glucose load is also a factor. Recent studies indicate that insulin resistance with resultant hyperinsulinemia and/or hyperglycemia can both be the cause and effect of several age-induced chronic disorders, chronic age-related metabolic perturbations. Several diseases including noninsulin-dependent diabetes mellitus, hypertension, obesity, dyslipidemia, and resultant atherosclerosis have all been ascribed to aging. High circulating glucose and other reducing sugars can have enzymatic reactions with proteins and nucleic acids to form various products in a mechanism identical to that in diabetes and enhanced lipid peroxidation as a result of accelerated free radical generation as a result of this may lead to atherosclerosis. Free radicals of oxygen are important causes of tissue damage in the aging process. These include inflammatory disease syndromes, cardiovascular disease, cataracts, and age-related macular degeneration, and diabetes itself. Diabetes is manifested by premature aging; accelerated free radical formation and resultant lipid peroxidation in diabetes are common. Ingestion of sugars, fats, and sodium have also been linked to decreased insulin sensitivity. On the contrary, caloric restriction, ingestion of chromium, vanadium, soluble fibers, magnesium, and certain

antioxidants and regular exercise often lead to enhanced insulin sensitivity. Therefore, manipulation of diet targeted to influence the glucose/insulin system may indeed affect lifespan in a positive manner and reduce the incidence of age-related chronic disorders.