Tytu?: Przegl?d bada? dotycz?cych hipotezy „witamina D-nowotwór- UVB pochodz?ce ze s?o?ca”. / A review of the evidence regarding the solar ultraviolet-B– vitamin D–cancer hypothesis.

S?owa kluczowe: nowotwory witamina D
Keywords: cancer vitamin D

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Streszczenie:

Liczba bada? oceniaj?cych wp?yw promieniowania ultrafioletowego (UVB) oraz witaminy D na obni?enie cz?sto?ci wyst?powania nowotworów i zwi?zanej z nim ?miertelno?ci stale ro?nie. W wielu badaniach ujawniono odwrotn? korelacj? mi?dzy dawkami UVB pochodzenia s?onecznego a cz?sto?ci? wyst?powania nowotworów i ?miertelno?ci?. W pracy dokonano przegl?du pi?miennictwa po?wi?conego tym zagadnieniom oraz omówiono mechanizmy oddzia?ywania witaminy D na nowotwór.

Abstract:

A large and growing body of literature addresses how solar ultraviolet-B (UVB) doses and vitamin D reduce the risk of cancer incidence and mortality. This evidence comes from ecological, observational, cross-sectional, and laboratory studies, as well as randomized controlled trials (RCTs). Usingthe criteria for causality that A. Bradford Hill established, we can evaluate the scientific evidence. The most appropriate criteria for vitamin D and cancer are strength of association, consistency (repeated findings in different populations), biological gradient, plausibility (mechanisms), and experimental verification. Many geography-based ecological studies have reported strong inverse correlations between indices of solar UVB doses and rates of cancer incidence or mortality. The 13 types of cancer with the strongest evidence – based on number of studies reporting strong inverse correlations – are bladder, female breast, colon, esophageal, gallbladder, gastric, ovarian, pancreatic, prostate, rectal, and renal cancer, as wellas lymphoma (Hodgkin’s and non-Hodgkin’s). Case-control studies of breast and colorectal cancer incidence find pronounce dinverse correlations with serum 25-hydroxyvitamin D [25(OH)D] concentrations, with rapid reductions in risk for increases of 25(OH)D concentration at low values and little change above about 100 nmol/l. Vitamin D reduces the risk of cancer through effects on cellular differentiation and proliferation, epithelial cell binding, metastasis, and angiogenesis around tumors, thus affecting cancer growth at all stages. Experimental verification of the UVB–vitamin D–cancer hypothesis comes from two RCTs, one treatment study, and many “accidental experiments” such as ecological and observational studies. One RCT found a 77% reduction in all-cancer incidence rates for postmenopausal women taking 1100 IU/dof vitamin D3 plus 1450 mg/d of calcium between the ends of the first and fourth years of the study. “Accidental experiments” include the findings that (1) those who develop nonmelanoma skin cancer may have reduced risk of internal cancers, especially if they live in areas warm enough to expose sufficient body surface area to generate adequate amounts ofvitamin D, and (2) that black Americans have lower cancer incidence, survival, and mortality rates, consistent with having about 35% lower serum 25(OH)D concentrations than white Americans. The available evidence indicates that for optimal cancer risk reduction, serum 25(OH)D concentrations shouldbe above 100 nmol/l and that oral intake without significant vitamin D production from solar UVB irradiance should be1000–5000 IU/day of vitamin D3.