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The association of vitamins C and K3 kills cancer cells mainly by autoschizis, a novel form of cell death. Basis for their potential use as coadjuvants in anticancer therapy.

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Source

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Abstract

Deficiency of alkaline and acid DNase is a hallmark in all non-necrotic cancer cells in animals and humans. These enzymes are reactivated at early stages of cancer cell death by vitamin C (acid DNase) and vitamin K(3) (alkaline DNase). Moreover, the coadministration of these vitamins (in a ratio of 100:1, for C and K(3), respectively) produced selective cancer cell death. Detailed morphological studies indicated that cell death is produced mainly by autoschizis, a new type of cancer cell death. Several mechanisms are involved in such a cell death induced by CK(3), they included: formation of H₂O₂ during vitamins redox cycling, oxidative stress, DNA fragmentation, no caspase-3 activation, and cell membrane injury with progressive loss of organelle-free cytoplasm. Changes in the phosphorylation level of some critical proteins leading to inactivation of NF-kappaB appear as main intracellular signal transduction pathways. The increase knowledge in the mechanisms underlying cancer cells death by CK(3) may ameliorate the techniques of their in vivo administration. The aim is to prepare the introduction of the association of vitamins C and K(3) into human clinics as a new, non-toxic adjuvant cancer therapy.

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