Stimulation of reactive oxygen species production and cytotoxicity in human neutrophils in vitro and after oral administration of a polyenzyme preparation.


Source

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Abstract

Polymorphonuclear neutrophils (PMN) can be primed for enhanced release of reactive oxygen species (ROS) by exposure to cytokines and biological response modifiers. ROS are considered to possess tumoricidal activity. The polyenzyme preparation Wobenzym (WE) contains pancreatin, papain, bromelain, trypsin and chymotrypsin and is used in adjuvant tumor therapy. We investigated killing of WE-exposed PMN against tumor cells and analyzed WE influence on ROS production in a chemiluminescence assay in PMN in vitro and in vivo. Depending on dose WE stimulates the cytotoxic capacity of PMN in vitro against tumor cells (50 micrograms/ml:p < 0.01). Exposure of PMN to Wobenzym caused a time-dependent significant (p < 0.02) increase in release of ROS. Similarly, oral administration of Wobenzym to healthy volunteers (n = 28) resulted in significant increases (p < 0.01) in ROS production, depending on dose (peak with 20 tablets) and time (peak 4 hours after Wobenzym administration). In contrast, ROS production was not elevated in the PMN of healthy volunteers receiving placebo (n = 8) or no treatment (n = 16). These findings point to an immunomodulatory capacity of WE in adjuvant tumor therapy.

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