ANTIOXIDANT PREPARATION AEVIT INCREASE OXIDATIVE STRESS IN RATS EXPOSED TO SINGLE-WALLED CARBON NANOTUBES

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Toxicity of carbon nanotubes (CNT) is thought to be consequence of aseptic inflammation and oxidative stress. This study was conducted to determine how far antioxidants may reduce CNT toxicity. Male Wistar rats were administered per os with Tuball© single-walled CNT (0.05 or 0.5 mg/kg/day) for 2 weeks in combination with Aevit© (retinol 25,000 IU/kg/day of and α-tocopherol 25 mg/kg/day). 10 markers of oxidative stress and 12 clinical chemistry markers were determined in rat blood samples. "Aevit+CNT" combination enhanced prooxidant action of CNT and caused biochemical signs of malabsorption, presumably due to delayed repair of intestinal epithelial cells, damaged by CNT. The lack of tocopherol secure against prooxidant effects of higher retinol concentrations can be explained by their separation in space, since only retinol has isoprenoid side chain needed for formation of donor-acceptor complexes with CNT surface. Retinol influence on wound healing is not related to reactive oxygen, but takes place at the level of gene transcription via nuclear receptors RARs and RXRs.