The Production of Oxygen Free Radicals by Cyanate in Cultured Osteoblast Cell

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Oxygen free radicals are known to contribute the complication and the pathogenesis of the end stage renal disease (ESRD). Several factors are know to affect the generation of oxygen free radicals and the damage by oxygen free radicals in patients with ESRD. Cyanate, which is derived spontaneously from urea at body temperature and pH, might also affect the generation of oxygen free radicals. We studied the effect of cyanate on the generation of the oxygen free radicals using osteoblastic cells. Osteoblastic ROS 17/2.8 cells, exposed to various concentrations of sodium cyanate, were used to analyze the levels of hydrogen peroxide which is one of the reactive oxygen species, molodialdehyde which is an indirect marker of lipid peroxidation. Treatment with cyanate induced 1.4 to 1.7-fold increase in MDA generation, and 1.5 to 2.3-fold increase in H_2O_2 generation. On the basis of these results, we suggest that cyanate is one of the factors which affects on the production of the oxygen free radicals in ESRD patients.

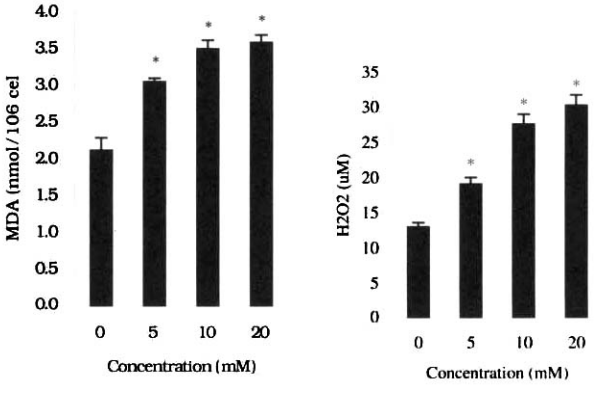

Fig. 1. *Effect of cyanate on lipid peroxidation (A) and H_2O_2 generation in ROS 17/2.8 cells. Cells were incubated with 5, 10 and 20 mM for 24 h. MAD was determined by the TBARS assay and H_2O_2 was measured by the xylenol orange method as described under Materials and Methods. Results are expressed as mean SD.*