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## Electrolyzed Reduced Water Which Can Scavenge Active Oxygen Species Suppresses Cell Growth and Regulates Gene Expression of Animal Cells

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Chapter

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### Abstract

Active oxygen species are considered to cause extensive oxidative damage to biological macromolecules, which bring about a variety of diseases as well as aging. Reduced water produced near cathode during electrolysis of water exhibits high pH, low dissolved oxygen, extremely high dissolvedmolecular hydrogen, and extremely

negative redox potential values. Recently we found that strongly electrolyzed reduced water scavenges active oxygen species and protects DNA from oxidative damage (Shirahata, S. *et al.*, *Biochem. Biophys. Res. Commun.*, **234**, 269–274 (1997)). Electrolyzed reduced water suppressed the growth of human normal fibroblast TIG-1, human lung adenocarcinoma A549, and human uterine cervix cancer HeLa, indicating that reduced water affects the signaling pathway of cell cycle. The expression of the interleukin-6 gene was enhanced by reduced water as well as ascorbic acid, (+)-catechin and tannic acid when added to the culture of human osteosarcoma MG-63 cells, suggesting that reduced water acts as a reductant to cells.

Keywords

**Active Oxygen Species**

**Human Lung Adenocarcinoma      Reduced Water**

**Tungsten Trioxide      Dissolve Hydrogen**

*These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.*

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