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Extension of the lifespan of Caenorhabditis elegans by the use of electrolyzed reduced water

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Abstract

Electrolyzed reduced water (ERW) has attracted much attention because of its therapeutic effects. In the present study, a new culture medium, which we designated Water medium, was developed to elucidate the effects of ERW on the lifespan of Caenorhabditis elegans. Wild-type C. elegans had a significantly shorter lifespan in Water medium than in conventional S medium. However, worms cultured in ERW-Water medium exhibited a significantly extended lifespan (from 11% to 41%) compared with worms cultured in ultrapure water-Water medium. There was no difference between the lifespans of worms cultured in ERW-S medium and ultrapure water-S medium. Nematodes cultured in ultrapure water-Water medium showed significantly higher levels of reactive oxygen species than those cultured in ultrapure water-S medium. Moreover, ERW-Water medium significantly reduced the ROS accumulation induced in the worms by paraquat, suggesting that ERW-Water medium extends the longevity of nematodes at least partly by scavenging ROS.

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