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[Biosci Biotechnol Biochem.](#) 2011;75(7):1295-9. doi: 10.1271/bbb.110072. Epub 2011 Jul 7.

Mechanism of the lifespan extension of *Caenorhabditis elegans* by electrolyzed reduced water--participation of Pt nanoparticles

Hanxu Yan ¹, Tomoya Kinjo, Huaize Tian, Takeki Hamasaki, Kiichiro Teruya, Shigeru Kabayama, Sanetaka Shirahata

Affiliations

PMID: 21737933 DOI: [10.1271/bbb.110072](#)

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Abstract

Electrolyzed reduced water (ERW) contains a large amount of molecular hydrogen and a small amount of Pt nanoparticles (Pt NPs). We have found that ERW significantly extended the lifespan of *Caenorhabditis elegans* in a novel culture medium designated Water Medium. In this study, we found that synthetic Pt NPs at ppb levels significantly extended the nematode lifespan and scavenged reactive oxygen species (ROS) in the nematode induced by paraquat treatment. In contrast, a high concentration of dissolved molecular hydrogen had no significant effect on the lifespan of the nematode. These findings suggest that the Pt NPs in ERW, rather than the molecular hydrogen, extend the longevity of the nematode, at least partly by scavenging ROS.

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