

The neuroprotective effects of electrolyzed reduced water and its model water containing molecular hydrogen and Pt nanoparticles

Background

Human brain is the biggest energy consuming tissue in human body. Although it only represents 2% of the body weight, it receives 20% of total body oxygen consumption and 25% of total body glucose utilization. For that reason, brain is considered to be the most vulnerable part of human body against the reactive oxygen species (ROS), a by-product of aerobic respiration. Oxidative stress is directly related to a series of brain dysfunctional disease such as Alzheimer's disease, Parkinson's disease etc. Electrolyzed reduced water (ERW) is a functional drinking water containing a lot of molecular hydrogen and a small amount of platinum nanoparticles (Pt NPs, Table [Table1](#)).1). ERW is known to scavenge ROS and protect DNA from oxidative damage [1]. We previously showed that ERW was capable of extending lifespan of *Caenorhabditis elegans* by scavenging ROS [2]. Molecular hydrogen could scavenge ROS and protected brain from oxidative stress [3]. Pt NPs are also a new type of multi-functional ROS scavenger [4].

Table 1

Characteristics of the water samples. The characteristics of water samples were determined immediately after the preparation of ERW. ERW, electrolyzed reduced water; CW, activated charcoal-treated water. The pH values were shown as average \pm standard ...