

# A way of using hydrogen-containing water for athletes

Verified the effect of hydrogen-containing water consumed by athletes before exercise, and propose the usage of water.

Professor, graduate school of the Kawasaki University of Medical Welfare  
M.D., Ph.D. Noriki Nagao



## Inhibition of DNA damage

### 《Method of Verification》

Athletes consumed two kinds of water for two consecutive weeks (330ml / three times a day) and compared DNA damage caused by reactive oxygen species.

#### Hydrogen-containing water      Mineral water

When DNA is damaged by reactive oxygen species, it is repaired by enzymes. 8-OHdG is produced during this process, transported through blood stream, and excreted in urine. We observed the degree of DNA damage by measuring the amount of this substance excreted in urine (the rate of production).

\* The formal name of 8-OHdG is 8-hydroxydeoxyguanosine, which is a marker of oxidative damage to DNA.

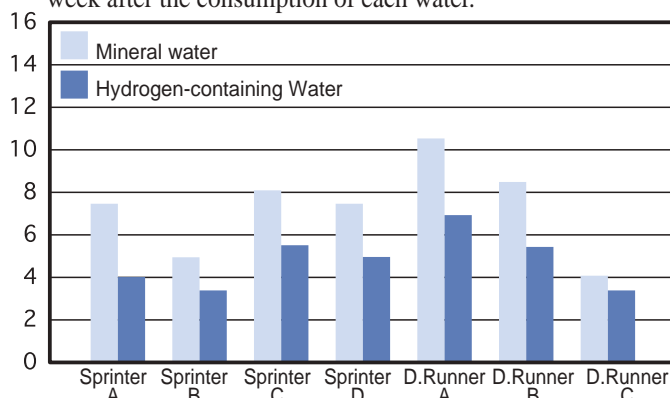
### 《Method of Comparison》

Seven male university students (4 sprinters / 3 distance runners) were the subjects, and they consumed hydrogen-containing water for a week and mineral water for a week before exercise. Urinary excretion of 8-OHdG was measured to compare.

### 《Verification A》

Results from 7 subjects

The comparison of the rate of 8-OHdG production total for a week after the consumption of each water.

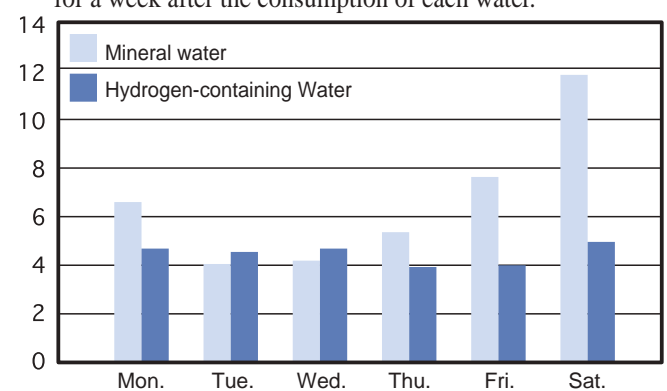


This figure suggests that the consumption of hydrogen-containing water before exercise, reduces the excretion of 8-OHdG per hour (the rate of production) in all seven subjects.

### 《Verification B》

Results from subject Spriter D

The comparison of the rate of 8-OHdG production each day for a week after the consumption of each water.



This figure suggests that the consumption of hydrogen-containing water before exercise, reduces the excretion of 8-OHdG per hour (the rate of production).

### 《Result of Verification》

From above verifications, it was shown that consumption of hydrogen-containing water before exercise reduces the level of 8-OHdG excreted in urine by 20% compared with consumption of mineral water.

In other words, consumption of hydrogen-containing water before exercise reduces DNA damage caused by reactive oxygen species (hydroxyl radical).

Hydrogen-containing water is an efficient method to reduce DNA damage and fatigue caused by physical stress and extreme training.

