

Effect of Treadmill Exercise and Hydrogen-Rich Water Intake on Oxidative Stress and Antioxidant Activity in Thoroughbred Horses

What did the researchers do?

- Five trained Thoroughbred racehorses completed intense treadmill exercise sessions.
- Before one exercise session, the horses received regular water.
- Before another session, they received hydrogen-rich water.
- Researchers measured markers of:
 - **Oxidative stress (cellular stress caused by free radicals)**
 - **Antioxidant activity (the body's defense system against oxidative damage)**

What did they find?

- ✓ Intense exercise increased oxidative stress
 - After strenuous exercise, the horses showed a significant rise in oxidative stress markers.
 - This confirms that hard physical exertion creates free radicals and cellular stress.
- ✓ The body responded with increased antioxidant defenses
 - At the same time oxidative stress increased, the horses' natural antioxidant activity also increased.
 - This suggests the body immediately attempts to protect itself from exercise-induced stress.
- ✓ Hydrogen-rich water showed antioxidant potential
 - Horses that received hydrogen-rich water tended to have lower oxidative stress levels before exercise compared with the placebo group.
 - The overall balance between antioxidants and oxidative stress was significantly better in the hydrogen-water trial.
- ✓ Recovery appeared more favorable
 - The antioxidant-to-oxidative-stress ratio returned toward normal more efficiently after exercise in the hydrogen-water group.
 - Researchers suggested this may indicate reduced free radical burden during and after intense exercise.

The study suggests that hydrogen-rich water may help support the body's natural antioxidant defenses and reduce some of the oxidative stress associated with intense physical activity.

Key Takeaway. This study found that intense exercise significantly increased oxidative stress in elite racehorses. Horses that received hydrogen-rich water showed signs of a healthier antioxidant balance and lower oxidative stress, suggesting hydrogen may help support recovery from strenuous exercise. However, larger studies are needed to confirm these findings.

To Read The Full Study

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