

Intravenous Infusion of Hydrogen-Rich Saline Suppresses Oxidative Stress and Elevates Antioxidant Potential in Thoroughbred Horses After Racing Exercise

What did the researchers do?

- Researchers studied 13 Thoroughbred racehorses before a high-intensity racing event.
- Two hours before racing, horses received either:
 - Regular saline (placebo), or
 - Hydrogen-rich saline containing dissolved molecular hydrogen.
- Blood samples were collected before and after the race to measure:
 - Oxidative stress
 - Antioxidant activity
 - Muscle damage markers
 - Recovery-related biomarkers.

What did they find?

- ✓ Hydrogen significantly reduced oxidative stress
 - Horses receiving hydrogen-rich saline showed significantly lower levels of oxidative stress after racing.
 - The reduction was observed immediately after the race and remained evident 3 and 24 hours later.
 - Researchers measured a marker called 8-OHdG, which reflects oxidative damage to DNA, and found it was substantially lower in the hydrogen group.
- ✓ Antioxidant potential increased
 - The hydrogen-treated horses showed a stronger antioxidant response after exercise.
 - This suggests hydrogen helped support the body's natural defense systems against exercise-induced free radicals.
- ✓ Hydrogen did not affect normal energy production
 - Both groups showed similar increases in lactate and uric acid after racing.
 - This means hydrogen did not interfere with the body's normal energy systems during intense exercise.
- ✓ Muscle damage still occurred
 - Markers of muscle strain increased in both groups after racing.
 - Hydrogen reduced oxidative stress but did not completely prevent the mechanical muscle stress caused by intense racing.

This study suggests that molecular hydrogen may help neutralize some of that oxidative stress while supporting the body's natural antioxidant defenses after strenuous exercise.

Key Takeaway This study found that administering hydrogen-rich saline before intense racing significantly reduced oxidative stress and enhanced antioxidant capacity in Thoroughbred horses. While it did not prevent the physical muscle strain associated with racing, hydrogen appeared to provide meaningful protection against exercise-induced oxidative damage.

To Read The Full Study

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