🔬 Long-Term Hydrogen-Rich Water on Antioxidant Activity & Gut Flora in Female Juvenile Soccer Players(Medical Gas Research, 2019 — Suzhou, China)

📌 What's it about?

- Investigated whether drinking hydrogen-rich water (HRW) daily for 2 months affects antioxidant markers, inflammation levels, and gut microbiome health in young female soccer athletes

👥 Who was studied?

- 38 juvenile female soccer players from the Suzhou Sports School, randomly divided into a control group (n=10) and a HRW treatment group (n=28)
- ⚠️ Note: the groups were unequal in size and also differed in age and years of training at baseline — the HRW group was younger and less trained, which affects result interpretation

🧪 How was it done?

- The HRW group replaced their usual water intake with hydrogen-rich water for 2 months; the control group continued drinking regular water nih
- Blood samples measured: MDA (oxidative damage), SOD & T-AOC (antioxidant capacity), Hemoglobin, Blood Urea Nitrogen (BUN), Creatine Kinase (CK)
- Inflammation markers measured: IL-1, IL-6, TNF-α
- Gut flora analyzed via 16S rDNA sequencing of stool samples at baseline and after the intervention

📊 Key Results

Antioxidant & Recovery Markers:

- ✅ MDA (lipid peroxidation/oxidative damage marker) was significantly lower in the HRW group after 8 weeks compared to controls
- ✅ SOD levels remained consistently higher in the HRW group, and total antioxidant capacity also showed significant differences between groups
- ✅ Hemoglobin increased more significantly in the HRW group after 8 weeks, suggesting a beneficial effect on oxygen-carrying capacity
- 📉 BUN (protein breakdown indicator) trended lower in the HRW group at 8 weeks, though the difference wasn't statistically significant (p=0.887)

I**nflammation**:

- ✅ After 8 weeks, IL-1, IL-6, and TNF-α were all significantly lower in the HRW group compared to controls, indicating a meaningful anti-inflammatory effect

Gut Flora:

- ✅ After 2 months of HRW consumption, the diversity and abundance of gut flora were higher in the HRW group than in controls, as measured by the sobs, ace, chao, and shannon indices

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✅ Conclusion

- Two months of hydrogen-rich water consumption may play a role in modulating gut flora based on its antioxidant and anti-inflammatory activities nih
- Positive trends seen across oxidative stress, inflammation, and gut diversity markers

⚠️ Limitations — Important ones here

- Unequal group sizes (10 vs 28) and baseline differences in age, weight, height, and years of training make direct comparison difficult
- The gut flora diversity improvements were not statistically significant — interesting trend but not proven
- The two groups had pre-existing differences in gut flora components before the trial began, partly due to differences in training experience
- No blinding mentioned — participants knew whether they were drinking HRW or regular water
- All female, juvenile, Chinese athletes — results may not generalize broadly
- No long-term follow-up beyond 8 weeks

🧠 Bottom Line This is one of the more comprehensive H2 sports studies — measuring multiple blood biomarkers and gut health over 2 months. The antioxidant and anti-inflammatory results are reasonably strong. The gut flora data is intriguing but statistically weak. The unequal and non-matched groups are the biggest methodological concern. Worth including with appropriate caveats.

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