Condensed Version and key points from the study:

Therapeutic efficacy of infused molecular hydrogen in saline on rheumatoid arthritis: a randomized, double-blind, placebo-controlled pilot study

Study Design

- A randomized, double-blind, placebo-controlled pilot study in 24 rheumatoid arthritis (RA) patients, investigating whether intravenous infusion of hydrogen-dissolved saline (H2-saline at 1 ppm) could safely and effectively reduce disease activity.

- **Patients** were split 1:1 to receive 500 ml of either H2-saline or plain placebo saline, administered as a daily intravenous drip infusion for 5 consecutive days, with follow-up at 4 weeks.

Disease Activity (Joint Inflammation)

- In the H2-infused group, the standard RA disease activity score across 28 joints (DAS28) dropped substantially — from 5.18 at baseline to 4.02 immediately after the infusion course, and further to 3.74 at the 4-week follow-up. nih
- No significant decrease in DAS28 was seen in the placebo group at any point during the study.

Inflammation Markers

- IL-6 (a key driver of RA inflammation) fell by about 37% in the H2 group over 4 weeks, while it actually rose by roughly 34% in the placebo group over the same period.

- **MMP-3** — an enzyme involved in joint tissue destruction — was reduced by approximately 19% in the H2 group at 4 weeks, while it increased by about 17% in the placebo group.

- TNF-α levels did not change notably in either group over the 4-week post-infusion period.

Oxidative Stress

- Urinary 8-OHdG — a marker of DNA damage caused by oxidative stress — decreased significantly by 4.7% in the H2 group, indicating a reduction in systemic oxidative damage.

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Safety

- The authors concluded that the H2-saline drip infusion safely and effectively reduced RA disease activity, with no safety concerns reported.

Conclusion

- H2-saline infusion produced meaningful reductions in joint disease activity, IL-6, MMP-3, and oxidative stress markers in RA patients, suggesting a potential therapeutic role for molecular hydrogen in managing rheumatoid arthritis.

Important Caveats: This was a small pilot study with only 24 patients and a very short treatment window of just 5 days of IV infusion. The delivery method (intravenous infusion) is also quite different from drinking hydrogen-rich water, making it less practical for everyday use. Larger and longer trials are needed to confirm these findings. One co-author is affiliated with MiZ Company, a commercial hydrogen product manufacturer, which is worth noting as a potential conflict of interest.

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