

FULL TEXT LINKS

**OXFORD**  
ACADEMIC

Clinical Trial    [Nephrol Dial Transplant](#). 2010 Sep;25(9):3026-33. doi: 10.1093/ndt/gfq196.  
Epub 2010 Apr 12.

# A novel bioactive haemodialysis system using dissolved dihydrogen (H<sub>2</sub>) produced by water electrolysis: a clinical trial

Masaaki Nakayama <sup>1</sup>, Hirofumi Nakano, Hiromi Hamada, Noritomo Itami, Ryoichi Nakazawa, Sadayoshi Ito

Affiliations

PMID: 20388631    DOI: [10.1093/ndt/gfq196](#)

## Abstract

**Background:** Chronic inflammation in haemodialysis (HD) patients indicates a poor prognosis. However, therapeutic approaches are limited. Hydrogen gas (H<sub>2</sub>) ameliorates oxidative and inflammatory injuries to organs in animal models. We developed an HD system using a dialysis solution with high levels of dissolved H<sub>2</sub> and examined the clinical effects.

**Methods:** Dialysis solution with H<sub>2</sub> (average of 48 ppb) was produced by mixing dialysate concentrates and reverse osmosis water containing dissolved H<sub>2</sub> generated by a water electrolysis technique. Subjects comprised 21 stable patients on standard HD who were switched to the test HD for 6 months at three sessions a week.

**Results:** During the study period, no adverse clinical signs or symptoms were observed. A significant decrease in systolic blood pressure (SBP) before and after dialysis was observed during the study, and a significant number of patients achieved SBP <140 mmHg after HD (baseline, 21%; 6 months, 62%; P < 0.05). Changes in dialysis parameters were minimal, while significant decreases in levels of plasma monocyte chemoattractant protein 1 (P < 0.01) and myeloperoxidase (P < 0.05) were identified.

**Conclusions:** Adding H<sub>2</sub> to haemodialysis solutions ameliorated inflammatory reactions and improved BP control. This system could offer a novel therapeutic option for control of uraemia.

## Related information

[PubChem Compound \(MeSH Keyword\)](#)

## LinkOut – more resources

Full Text Sources

[Ovid Technologies, Inc.](#)

[Silverchair Information Systems](#)

Other Literature Sources

[The Lens - Patent Citations](#)

Medical

[MedlinePlus Health Information](#)

Research Materials

