

#1829 - Hydrogen sulfide improves chronic kidney disease by ameliorating proteinuria and antioxidant status in rats.

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Body

Abstract

Introduction: Chronic kidney disease (CKD) is prevalent worldwide. Hydrogen sulfide (H₂S) plays an important role in renal physiological and pathophysiological processes. However, whether H₂S is able to mitigate kidney injury induced by 5/6 nephrectomy (5/6 Nx) in rat remains unclear. This study aimed to examine the effects of sodium hydrosulfide (NaHS) as a prominent donor of hydrogen sulfide to exert renoprotection on 5/6 Nx animal model.

Material & methods: Twenty-four rats were randomly divided into 3 groups: Sham, 5/6 Nx, 5/6Nx+NaHS group. NaHS (30 micromol/l) was added twice daily into the drinking water. Renal failure was induced by five-sixth (5/6) nephrectomy. We evaluated proteinuria and tissue catalase (CAT) activity and glutathione (GSH) concentration 12 weeks after surgery.

Results: Five-sixth nephrectomy significantly induced severe renal damages, as indicated by reduced antioxidant status (CAT activity and GSH concentration) and proteinuria (P <0.05). NaHS treatment, however, significantly attenuated renal dysfunction, but also improved proteinuria and antioxidant status in the kidney (P <0.05).

Conclusions: Overall, hydrogen sulfide has a favorable renoprotection in CKD. The antiproteinuric and antioxidant roles may be the important part of its therapeutic effects. All these indicate that hydrogen sulfide is likely to be a useful agent for preventing the progression of CKD.

Key words: Chronic kidney disease; Hydrogen sulfide; Antioxidant status; Proteinuria.

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