

#1946 - Long-term exercise restores hydrogen sulfide in the kidney and contributes to exercise benefits in 5/6 nephrectomized rats

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Body physical exercise is shown to have protective effect on chronic kidney disease (CKD). CKD itself is associated with a reduction in renal hydrogen sulfide (H₂S) concentration. This study was designed to investigate whether protective effect of exercise in 5/6 nephrectomized (5/6 NX) rat is associated with H₂S levels in the kidney? Twenty-four male Wistar rats weighing 250-300 g were assigned into 4 groups: 1- sham 2- sham exercise 3- 5/6 NX 4- 5/6 NX+exercise. To induce CKD, 4 days after removing upper and anesthesia and surgery were performed by treadmill at a speed of 18m/min for 8 weeks. At the end of the twelfth week, blood and kidney samples were collected to measure renal function (levels of plasma urea and creatinine), oxidative stress markers (renal MDA level and SOD activity), and histological indices. Eight-week exercise significantly improved serum creatinine, BUN, renal MDA level, SOD activity, renal sympathetic nerve activity (RSNA), hypertension, and renal histology in addition to renal H₂S level compared to the 5/6 NX group. The results suggest that regular exercise improves renal oxidative status and ameliorates renal damage, hypertension, and RSNA in 5/6 nephrectomized rats. These improvements by exercise might be associated with the increase in renal H₂S level.

References

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