Exercise training does not affect the plasma irisin concentration in hemodialysis patients

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INTRODUCTION

Irisin, a recently discovered hormone secreted by myocytes induced in exercise, acts as a muscle-derived energy-expenditure signal that binds to undetermined receptors on the white adipose tissue surface, stimulating its browning and uncoupling protein 1 (UCP1) expression.

OBJECTIVES

The purposes of this study were to assess the effect of an intradialytic resistance exercise training program (RETP) on circulating concentrations of irisin in hemodialysis (HD) patients and compare irisin plasma levels in these patients and healthy individuals.

METHODS

This longitudinal study enrolled 26 chronic kidney disease patients (CKD) (50% men, 44.7 ± 14.1 yrs, 23.5±3.9kg/m^2). The healthy individuals group consisted of 11 women and 7 men with mean age of 50.9 ± 6.1 yrs and BMI, 24.2 ± 2.7kg/m^2. Anthropometric and biochemistry parameters (irisin by Enzyme-Linked Immunosorbent Assay) were measured at the baseline and after 6 months of RETP (in both lower limbs) that was performed during the first 3 hours of hemodialysis, three times a week for 72 sessions.

RESULTS

There was no difference regarding gender, age and body mass index (BMI) between HD patients and healthy individuals. Baseline plasma levels of irisin in HD patients were significantly lower than in healthy individuals (71.0 ± 41.6 vs 101.3 ± 12.5ng/mL, $p<0.05$). There was no significant difference on irisin plasma levels between women and men (77.5 ± 44.4 vs 64.6 ± 39.4 ng/mL). Although the muscle mass increased in consequence of exercise (evaluated by arm muscle area from 27.9 (24.1) to 33.1(19.0)cm2), irisin plasma levels did not differ significantly before and after RETP (71.0 ± 41.6 vs 73.3 ± 36.0 ng/mL).

CONCLUSION

HD patients seem to have lower irisin levels when compared to healthy individuals. Moreover, a resistance exercise training program was unable to augment irisin levels despite increasing muscle mass.

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