

# Effects of a resistance exercise training program on acyl-ghrelin and obestatin levels in hemodialysis patients

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## INTRODUCTION

Appetite hormones peptides are altered by exercises in general population. However, no study has evaluated the effects of exercise on these hormones in chronic kidney disease (CKD) patients.

## OBJECTIVES

The purpose of this study was to assess the effects of an intradialytic resistance exercise training program (RETP) on plasma levels of gut peptides (acyl-ghrelin and obestatin) in hemodialysis (HD) patients.

## METHODS

The study enrolled 37 hemodialysis (HD) patients (61.5% men, 45.9 ± 14.1 yrs, 23.5 ± 3.9kg/m<sup>2</sup>). Acyl-ghrelin and obestatin plasma levels (measured using the enzyme immunometric assay) were performed in the fasted state at baseline and after 6 months of RETP (supervised, 3 days/wk, total 72 sessions). Anthropometric measurement and food intake were assessed. Statistical analyses were performed using SPSS 19.0.

## RESULTS

After 6 months of RETP, there was increase in men's fat free mass (from 51.3 ± 10 to 53.2 ± 10kg, p < 0.05), and arm muscle area in all patients. The energy and protein intakes were similar before and after exercises, however; there were significant reduction in the anorexigenic hormone levels (obestatin) from 3.0 ng/mL (2.3-3.4 ng/mL) to 1.9 ng/mL (0.6-3.4ng/mL) and increase in the orexigenic (acyl-ghrelin) from 21.5 ng/mL (1.3-77.7 ng/mL) to 37.2ng/mL (16.7-94.1 ng/mL).

Table 1: Biochemical parameters in HD patients before and after RETP

Parameters	Before	After
Albumin (g/dL)	3.7 ± 0.3	3.9 ± 0.2*
Creatinine (mg/dL)	12.4 ± 3.5	12.3 ± 3.3
Kt/V	1.4 ± 0.3	1.3 ± 0.4
Potassium (mEq/L)	4.9 ± 0.5	4.8 ± 0.6
Acyl-ghrelin (pg/mL)	21.5 (1.3-77.7)	37.2 (16.7-94.1)**
Obestatin (ng/mL)	3.0 (2.3-3.4)	1.9 (0.6-3.4)**
Acyl-ghrelin/Obestatin ratio	0.07 (0.01-0.06)	0.2 (0.08-0.7)

\*p = .001, Paired Samples Tests, T-Test; \*\* p < .001, Wilcoxon Signed Ranks Test.

## CONCLUSION

In conclusion, the RETP for 6 months in HD patients led to significant changes in appetite hormones and it seems to be good intervention for the nutritional status of these patients.

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