

# TREATMENT WITH PTH 1-84 INFLUENCES GLUCOSE METABOLISM THROUGH OSTEOCALCIN

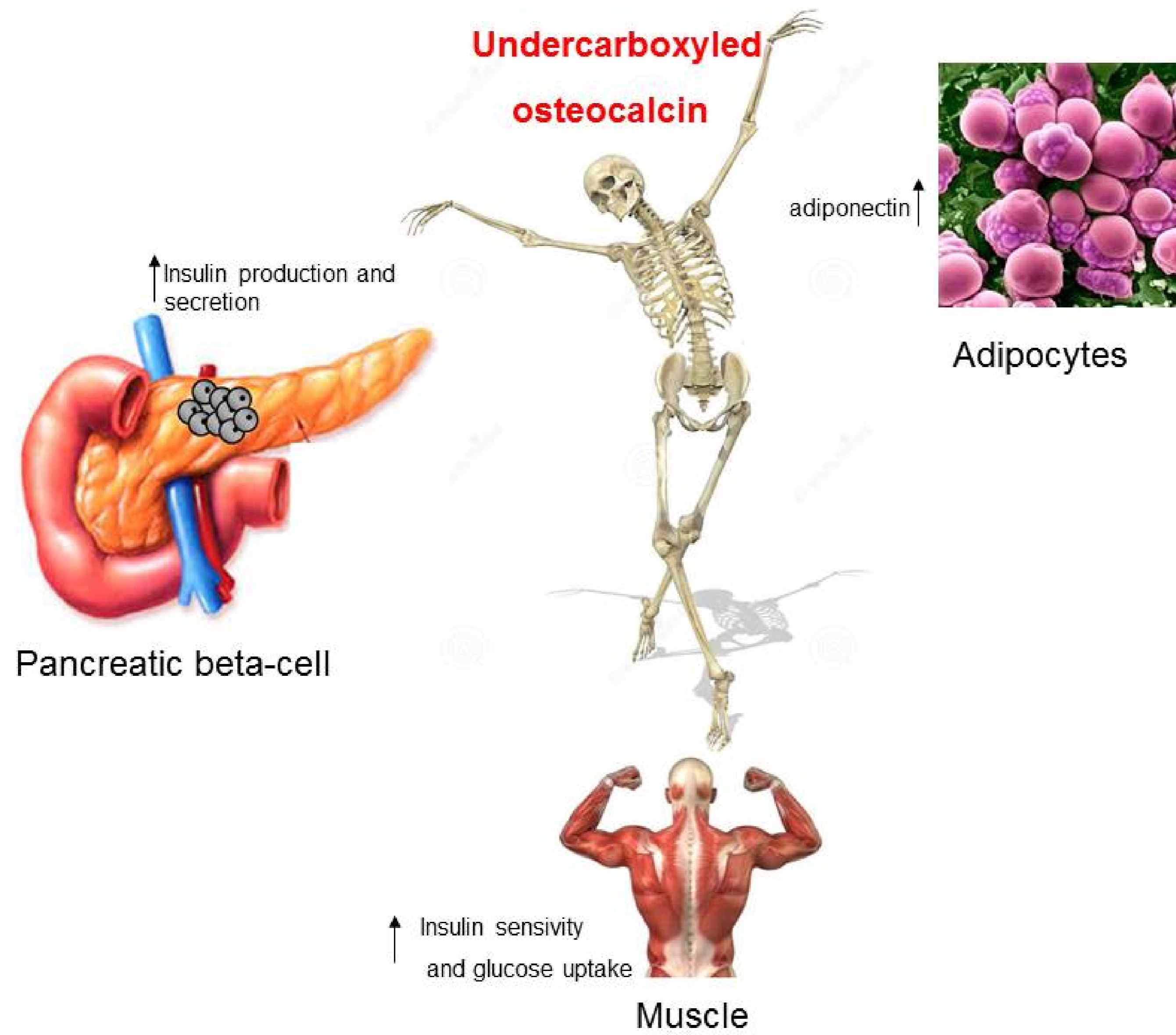
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## INTRODUCTION

In the recent years it has been demonstrated bone turnover may influence fat and glucose homeostasis mainly through the osteoblast-specific protein osteocalcin (OC), in its undercarboxylated form (uOC).



## AIM

To evaluate the effect of bone anabolic treatment with 1-84 PTH on glucose metabolism.

## METHODS

- We enrolled in the study 43 women affected by postmenopausal osteoporosis; the patients were randomly assigned to treatment with:
  - 1-84 PTH 100 µg plus calcium 1200 mg and vitamin D 800 UI daily (21, iPTH)
  - calcium 1200 mg and vitamin D 800 UI daily (22)
- Glucose and bone metabolism were evaluated at basal and after 3, 6, 12 and 18 months of treatment.

## RESULTS

### iPTH increases bone formation

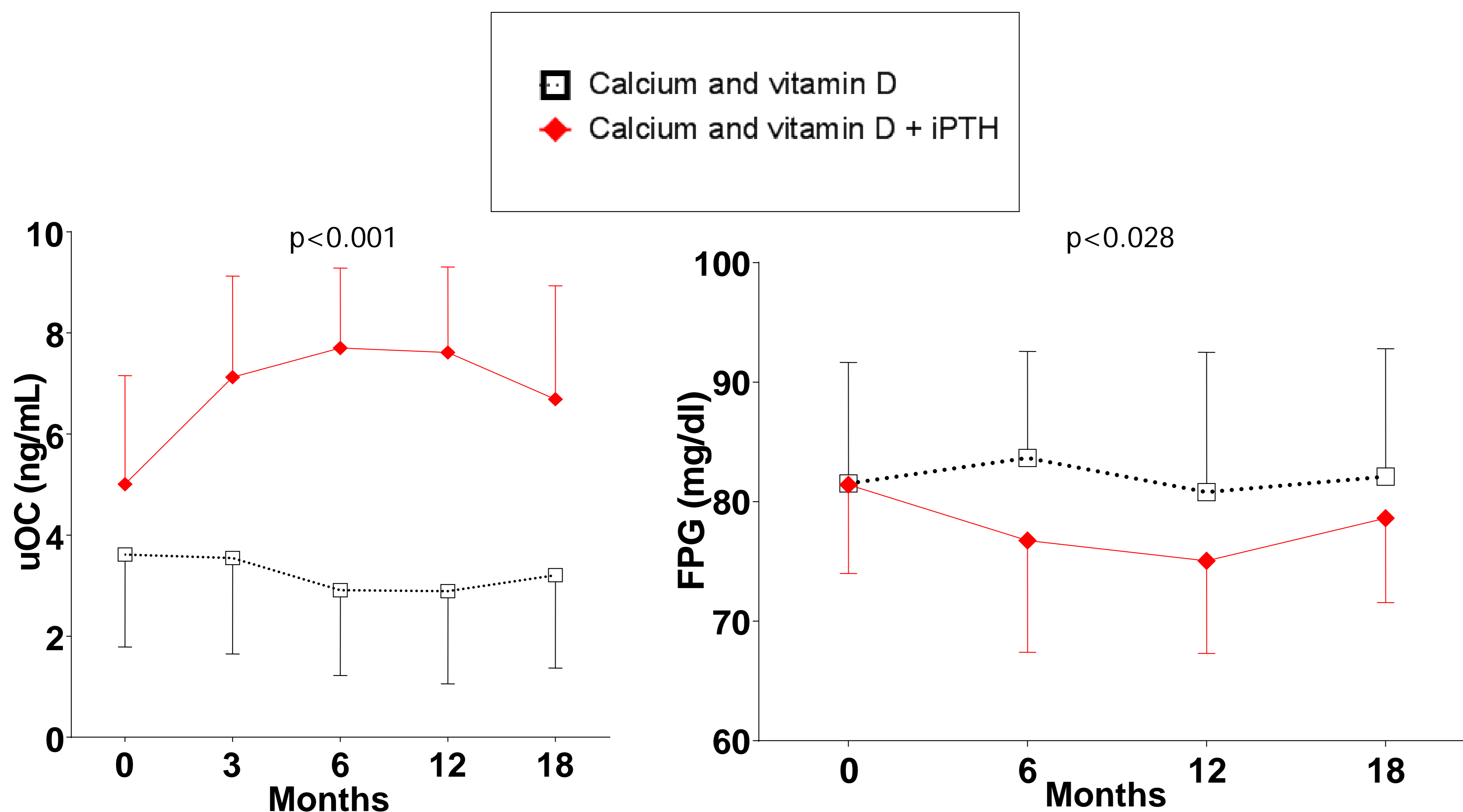
The administration of intermittent PTH significantly increases markers of bone turnover, and in particular it increases OC and uOC at each time point.

### iPTH lowers plasma glucose

In patients treated with PTH there is a significant decrease in fasting plasma glucose (FPG), without effect on insulin secretion, resistance and β-cell functions measured by OGTT derived parameters and by serum amylin. iPTH does not influence fat mass and adipokines production.

To evaluate if the increase in uOC and OC mediates the effect of treatment on FPG we adopted a mediation analyses model.

Our analyses suggest that the effect of PTH on FPG is partially mediated by its effect on OC (61.2%).



Regression coefficients for FPG vs OC and treatment		
	Coefficient	95% CI
Treatment $\theta_1$	0.034	-0.208, 0.277
Log (OC) $\theta_2$	0.037	-0.053, 0.127
Interaction $\theta_3$	-0.063	-0.175, 0.049
Constant $\theta_0$	4.347	4.234, 4.461
Regression coefficients for OC vs treatment		
	Coefficient	95% CI
Treatment $\beta_1$	2.019	1.492, 2.546
Constant $\beta_2$	1.073	0.701, 1.446
Total, direct and indirect effects		
	Coefficient	95% CI
Controlled direct effect	-0.078	-0.211, 0.055
Indirect effect	-0.052	-0.186, 0.081
Direct effect	-0.033	-0.187, 0.122
Total effect	-0.085	-0.168, -0.002

## CONCLUSIONS

In this study we show that PTH treatment influences fasting plasma glucose levels partially through its anabolic effect on bone turnover and particularly by the increase in OC, otherwise we cannot find an effect of treatment mediated by uOC, this could be due to the lower effect of PTH treatment on uOC as compared to OC.

## REFERENCES

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