THE OXYTOCIN REGULATES KIDNEY FUNCTION THROUGH V2 RECEPTOR

Jolanta Gutkowska, Eric Plante, Ahmed Menouar, Bogdan Danalache, Marek Jankowski
Centre de recherche, Centre hospitalier de l’Université de Montréal (CRCHUM), Montréal, Canada

Abstract

Objectives: The role of oxytocin in kidney reabsorption is not well understood. The aim of this study was to investigate whether oxytocin (OT) influences the kidney function.

Methods: Male rats were used in this study. The animals were divided into four groups: control (CON), OT (1 mg/kg, i.v.), sodium-restricted (SR, 1.5% NaCl), and SR + OT. The levels of sodium and potassium in the blood and urine were measured before and after treatment.

Results: OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. SR significantly decreased the levels of sodium and increased the levels of potassium in the blood and urine. OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. The levels of sodium and potassium in the blood and urine were not significantly different between the SR + OT and SR groups.

Conclusions: OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. SR significantly decreased the levels of sodium and increased the levels of potassium in the blood and urine. OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. The levels of sodium and potassium in the blood and urine were not significantly different between the SR + OT and SR groups.

Materials & Methods

- Male rats were used in this study. The animals were divided into four groups: control (CON), OT (1 mg/kg, i.v.), sodium-restricted (SR, 1.5% NaCl), and SR + OT. The levels of sodium and potassium in the blood and urine were measured before and after treatment.
- OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. SR significantly decreased the levels of sodium and increased the levels of potassium in the blood and urine. OT significantly increased the levels of sodium and decreased the levels of potassium in the blood and urine. The levels of sodium and potassium in the blood and urine were not significantly different between the SR + OT and SR groups.

Highlights

- We have demonstrated that endogenous prohormonal peptide, OT-GKR, induces in the rat renal anti-diuretic, natriuretic, - kaluretic effects.
- OT-GKR competes with diuretic and natriuretic effects evoked by low concentration of OT in normal and volume expanded conditions.
- The binding sites for OT-GKR were found on the structure of OTR and APV V2 receptor.
- Although OT-GKR weakly induces cAMP in cells overexpressing V2, OT-GKR has synergistic effect on cAMP released by APV and inhibits cAMP induced by OT.