

## MYOCARDIAL AND RENAL REMODELING IN MALE WISTAR RATS RECEIVING HIGH SALT DIET

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### OBJECTIVES

Myocardium, kidney and vasculature, in particular, reacts to changes in dietary NaCl intake through a complex series of events that are independent of blood pressure. The aim of this study was to compare the effect of normal and high NaCl content in the diet on the remodeling of the heart and kidney, and the NFκB expression in the myocardium in rats.

### METHODS

#### EXPERIMENTAL ANIMALS:

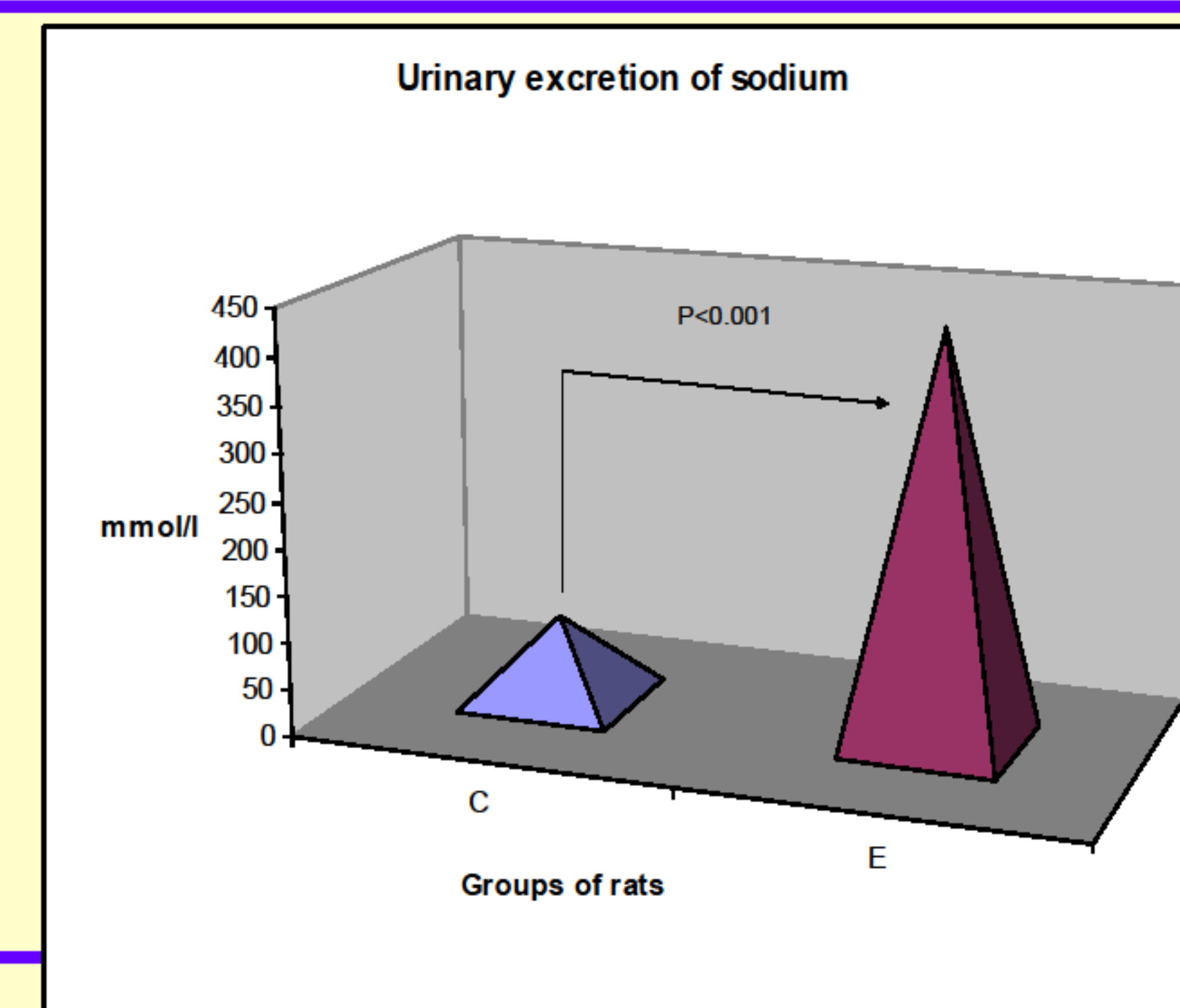
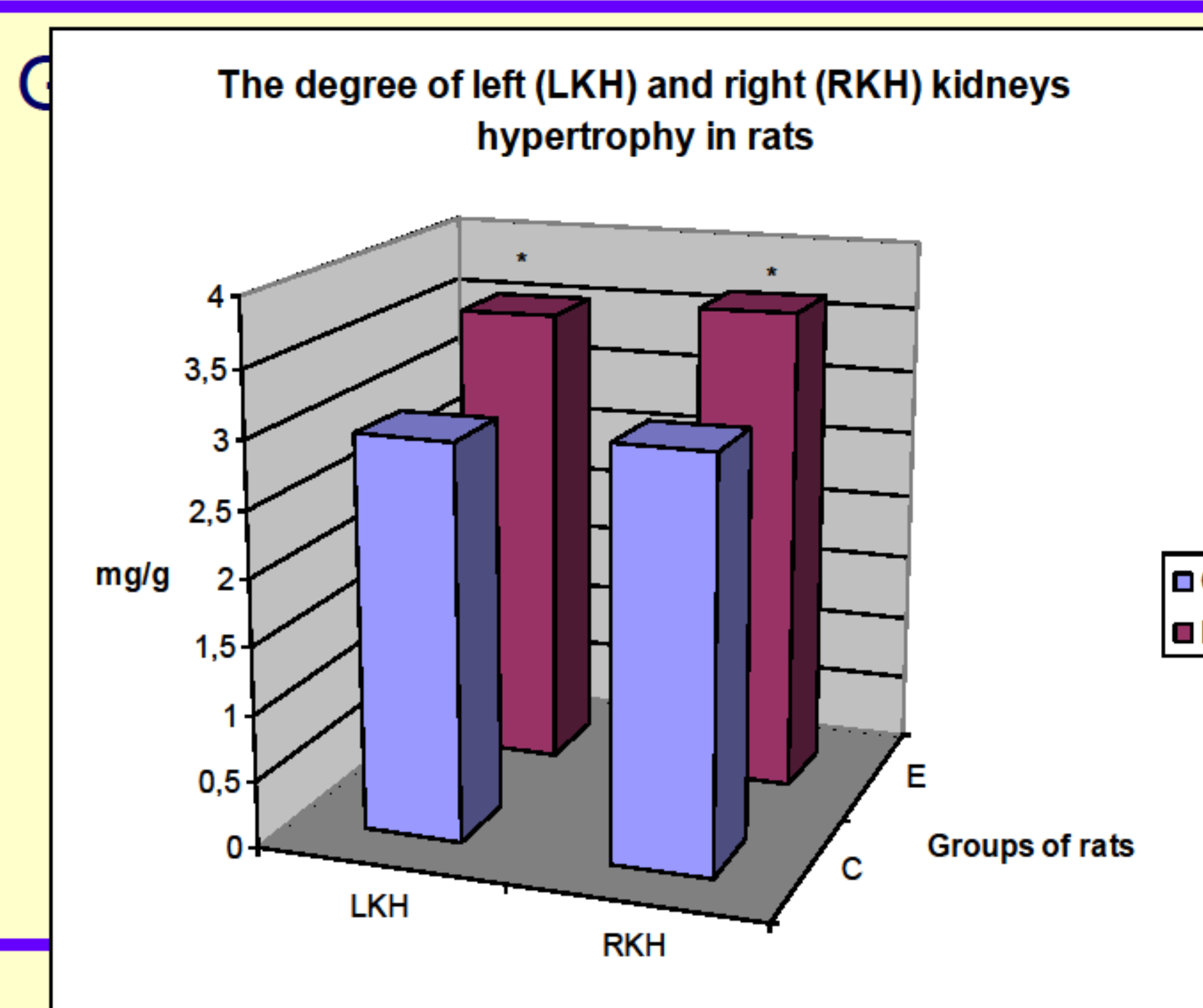
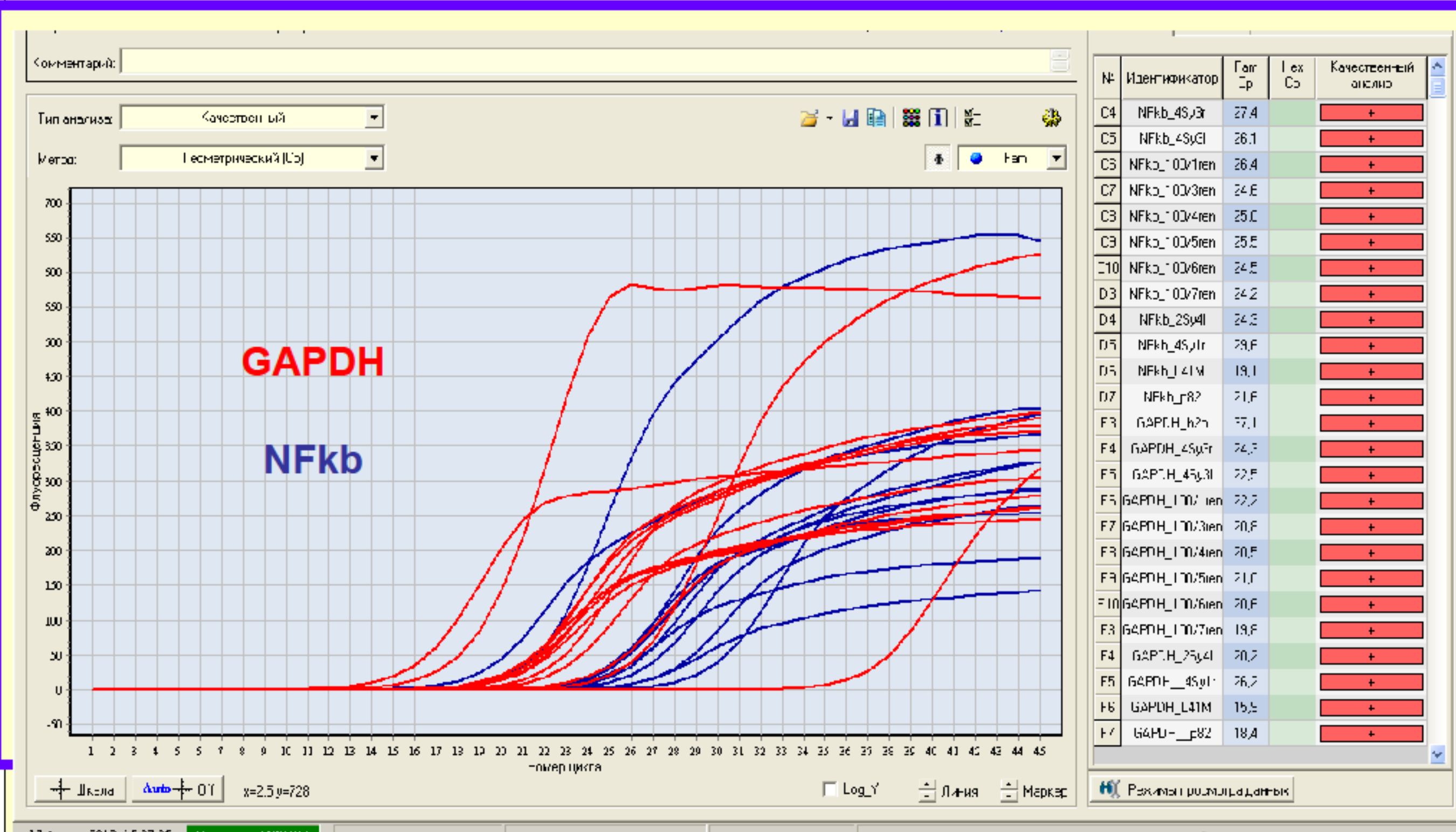
Adult male Wistar rats, weighing 200-250 g.

#### EXPERIMENTAL GROUPS:

Control group (C) of animals (n=8) received normal NaCl intake (0.34%) and experimental group (E) received high NaCl (8%; n=8). Experimental period was 8 weeks. Rats were maintained with free access to food and water, at 22 ± 2 °C under 12/12 h light/dark cycle.

#### METHODS:

Mean BP was measured in awaked rats by tail cuff method. Serum urea (Ur), creatinine (Cr), total calcium and sodium levels were determined. Daily volume of urine and concentration of sodium in the urine was also determined. The degree of left ventricular hypertrophy was estimated as a ratio: left ventricular mass/body mass (LVH; mg/g). The degree of left (LKH) and right (RKH) kidneys hypertrophy was estimated as a ratio: kidney mass/body mass, mg/g). Determination of NFκB expression relative level in myocardium was performed under the semi-quantitative protocol. The obtained results were normalized by the expression level of reference gene GAPDH and compared between control and experimental myocardium with the use of 2<sup>-(ΔΔCt)</sup> method.



### RESULTS

High salt intake does not lead significant rise (mean±SE) of BP (135±5 mmHg) compared with C (130±5 mmHg). There are no difference in concentrations of Ur (6.2±0.5 mmol/l in C vs 5.6±0.8 mmol/l in E), Cr (0.044±0.01mmol/l in C vs 0.038±0.02 mmol/l in E), calcium and sodium in the blood serum between groups. High intake of NaCl produced a significant increase in urinary excretion of sodium (434.6±67.4 mmol/l vs 89.4±10.3 mmol/l – in C, p < 0.001) in the absence of significant distinction of daily volume of urine between groups. Consumption of a diet with the high intake of NaCl was accompanied by increase of weight of left and right kidneys: the LKH was 3.51±0.07 mg/g (vs 2.97±0.08 mg/g – in C, p<0.01), the RKH – 3.65±0.05 mg/g (vs 3.05±0.07 mg/g – in C, p<0.01). No significant differences in LVH could be detected among the groups (3.12±0.12 mg/g in C vs 3.01±0.09 mg/g in E). On the other hand high NaCl diet was accompanied by increase activity of the NFκB. Relative level of NFκB gene expression in E was in 3.4 times higher than in C.

### CONCLUSIONS

Consumption during the 2 months of a diet high in NaCl, without causing a rise in BP in Wistar rats leads to an increase in mass of the kidneys and the activation of NFκB in the myocardium, which may be one of the ways of myocardial remodeling and fibrosis.

