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**THE EFFECT OF SALT LOADING AND POTASSIUM SUPPLEMENT ON HYPERTENSION AND THE BALANCE OF TEFF AND TREG IN DAHL SALT SENSITIVE RATS**

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<sup>1</sup>Shuhui Zheng, <sup>2</sup>Jianjun Mu. <sup>1</sup>Cardiovascular Department of First Affiliated Hospital of Medical College, Xi'an Jiaotong University; <sup>2</sup>Cardiovascular Department, First Affiliated Hospital of Medical College, Xi'an Jiaotong University

**Objectives** High dietary salt intake caused high blood pressure and renal injury. Potassium had an antihypertensive effect. In recent years, the infiltration or activation of immune cells has been implicated in the pathogenesis of salt-sensitive hypertension and target organ damage. This study investigated the effect of salt loading and potassium supplement on blood pressure and the balance of Teff and Treg in Dahl salt sensitive rats.

**Methods** Male Dahl salt sensitive rats and cosmic SS13BN rats were fed HS (8.0% NaCl) or normal salt (NS; 0.4% NaCl) diet or high-potassium plus high-salt (8% KCl+8% NaCl) diets for 8 weeks. Systolic blood pressure were measured by tail-cuff plethysmography. We investigated the infiltration of lymphocytes in kidney using immunohistochemical and immunoblotting. Real-time PCR was performed to identify IFN- $\gamma$  mRNA, IL-4 mRNA and Foxp3 mRNA. Flow cytometric analysis were performed to analysis the percentage of Th1 (CD4+INF-r+), Th2 (CD4+IL-4+) and Treg (CD4+CD25+Foxp3+) in spleen.

**Results** Compared with the SS13BN rats, the SS rats consuming a high-salt diet exhibited significant higher mean arterial pressure (MAP) (175.9 $\pm$ 2.3 mm Hg vs 143.6 $\pm$ 2.4 mm Hg), and lower MAP after high-potassium supplement (116.8 $\pm$ 4.7 mm Hg vs 125.3 $\pm$ 2.1 mm Hg)  $p < 0.05$ . Immunohistochemical staining showed that in SS, the infiltration of lymphocytes in kidney was enhanced after high-salt diet, the changes were not remarkable in the high-salt/K, or SS13BN groups. The renal Foxp3 mRNA was down-regulated in the high salt group compared with normal salt group and up-regulated in the high-salt/K group compared with high salt group in SS rats. Salt loading enhanced the percentage of Th1 splenocyte ((22.1 $\pm$ 0.82%) vs (16.7 $\pm$ 0.65%)) in SS rats, reduced the number of Tregs ((3.89 $\pm$ 0.54%) vs (6.52 $\pm$ 0.38%)). The high-salt/K group had opposite results.

**Conclusions** The balance of T cells participate the pathogenesis of salt-sensitive hypertension and kidney injury, potassium supplement could exert protection against hypertension and target organ damage.