

# Myeloid CD11c+ antigen-presenting cells ablation prevents hypertension in response to angiotensin II plus high-salt diet

Hevia D.

Araos P.

Prado C.

Luppichini E.F.

Rojas M.

Alzamora R.

Cifuentes-Araneda F.

Gonzalez A.A.

Amador C.A.

Pacheco R.

Michea L.

Increasing evidence shows that antigen-presenting cells (APCs) are involved in the development of inflammation associated to hypertension. However, the potential role of APCs in the modulation of renal sodium transport has not been addressed. We hypothesized that APCs participate in renal sodium transport and, thus, development of high blood pressure in response to angiotensin II plus a high-salt diet. Using transgenic mice that allow the ablation of CD11c<sup>high</sup> APCs, we studied renal sodium transport, the intrarenal renin-angiotensin system components, blood pressure, and cardiac/renal tissue damage in response to angiotensin II plus a high-salt diet. Strikingly, we found that APCs are required for the development of hypertension and that the ablation/restitution of APCs produces rapid changes in the blood pressure in mice with angiotensin II plus a high-salt diet.

Moreover, APCs were necessary for the induction of intrarenal renin-angiotensin system components and affected the modulation of natriuresis and tubular sodium transporters. Consistent with the prevention of hypertension, the ablation of APCs also prevented cardiac hypertrophy and the induction of several indicators of renal and cardiac damage. Thus, our findings indicate a

prominent role of APCs as modulators of blood pressure by mechanisms including renal sodium handling, with kinetics that suggest the involvement of tubular cell functions in addition to the modulation of inflammation and adaptive immune response. © 2017 The Authors.

Angiotensin II

Antigen-presenting cells

Epithelial sodium channel

Hypertension

Inflammation

angiotensin II

CD4 antigen

CD86 antigen

dipeptidyl carboxypeptidase

epithelial sodium channel

glycoprotein p 15095

interleukin 10

interleukin 1beta

interleukin 6

major histocompatibility antigen class 1

major histocompatibility antigen class 2

messenger RNA

prorenin receptor

reduced nicotinamide adenine dinucleotide phosphate oxidase 2

reduced nicotinamide adenine dinucleotide phosphate oxidase 4

sodium chloride cotransporter

sodium proton exchange protein 3

transcription factor FOXP3

tumor necrosis factor

angiotensin II

epithelial sodium channel

glycoprotein p 15095

adaptive immunity

animal experiment

animal model

animal tissue

antigen presenting cell

Article

blood pressure

bone marrow cell

controlled study

heart injury

heart ventricle hypertrophy

hypertension

immunomodulation

inflammation

kidney injury

male

mouse

natriuresis

nonhuman

oxidative stress

priority journal

protein expression

regulatory T lymphocyte

renin angiotensin aldosterone system

salt intake

sodium transport

animal

antigen presenting cell

bone marrow cell

disease model

immunology

ion transport

metabolism

pathophysiology

transgenic mouse

Angiotensin II

Animals

Antigen-Presenting Cells

Blood Pressure

CD11c Antigen

Disease Models, Animal

Epithelial Sodium Channels

Hypertension

Inflammation

Ion Transport

Mice

Mice, Transgenic

Myeloid Cells

Sodium Chloride, Dietary