CARDIOVASCULAR AND RENAL SYSTEM

2 Kidneys, 1 Clip (2K-1C)

The 2 Kidneys, 1 Clip (2K-1C) rat hypertension model (Goldblatt et al., 1934[1]) is a long-established and widely employed model in the study of renovascular hypertension. This model of hypertension is induced by a partial occlusion of one renal artery, leading to increased renin secretion and, consequently, hyperactivation of the renin–angiotensin–aldosterone system and arterial hypertension[2].

Species, strain, sex: *Rattus norvegicus* (Sprague Dawley) male
Number of animals/group: 4 to 6 animals
Route of administration: upon request
Treatment mode: upon request
Main read-outs: Mean blood pressure, systolic blood pressure, diastolic blood pressure and kidney weights

Validation Data

A

BLOOD PRESSURE CHANGES			
	Δ MAP	Δ SBP	Δ DBP
21 dias	29 mm Hg (33 %)	33 mm Hg (47 %)	26 mm Hg (34 %)
35 dias	42 mm Hg (47 %)	51 mm Hg (50 %)	32 mm Hg (42 %)

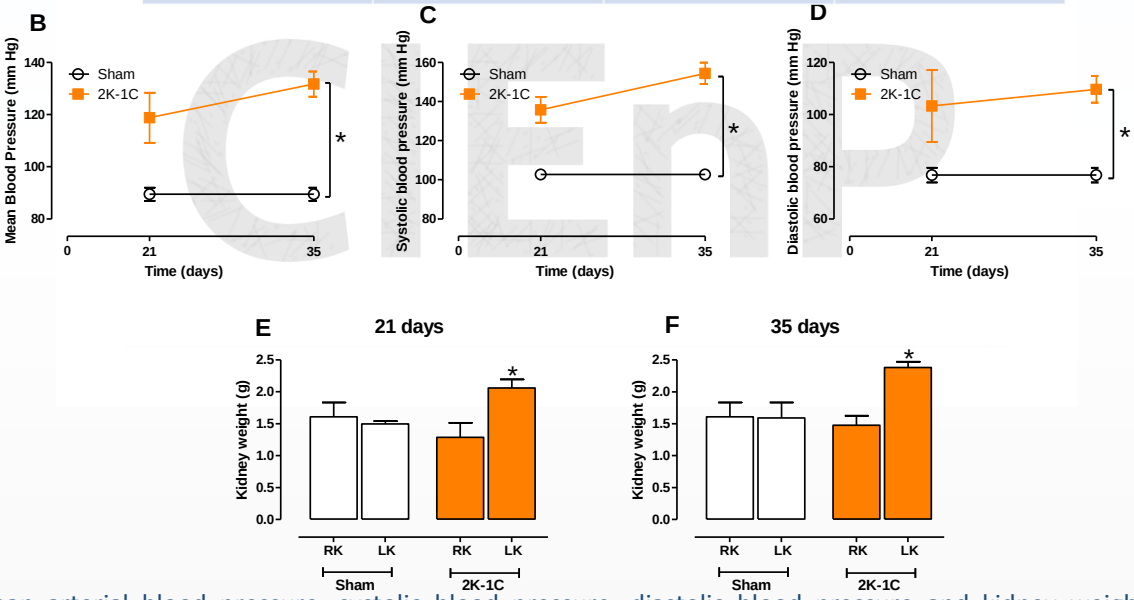

Figure: Mean arterial blood pressure, systolic blood pressure, diastolic blood pressure and kidney weights in 2K-1C hypertensive rats. The right kidney was exposed through a small flank incision and a 0.2 mm silver clip was placed around the renal artery. Pressures was measured in rats with renovascular and sham-operated with 21 and 35 days after hypertension induction. (A-D) Blood pressures changes. (E-F) Kidneys weight. Results are expressed as mean ± S.E.M of 4-6 animals per group. Statistical analysis was performed using one-way (ANOVA) followed by Bonferroni test *$P < 0.05$ compared with sham-operated animals.

To avoid bias and to allow reproducibility all in vivo experiments follow the ARRIVE guidances[3]. Rat colony from Charles River Laboratories are breed and maintained in SPF conditions. The project includes study plan and final report. Raw data are inspected by quality assurance unity. All experimental procedures are previously approved by the CIEnP Committee on the Ethical Use of Animals.

References:

[1]Goldblatt H, Lynch J, Hanzal RF & Summerville WW. Studies on experimental hypertension: The production of persistent elevation of systolic blood pressure by means of renal ischemia. J Exp Med 59, 347–379, 1934.

[2]Navar LG, Von Thun AM, Zou L, el-Dahr SS, Mitchell KD. Enhancement of intrarenal angiotensin II levels in 2 kidney 1 clip and angiotensin II induced hypertension. Blood Press Suppl. 2:88-92, 1995.

[3]Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting in vivo experiments: The ARRIVE guidelines. PLoS Biol. 8 (6): e1000412, 2010.

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