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## Low-dose aspirin improves renal function and antihypertensive efficacy in hypertensive rats treated with losartan

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The combined treatment with low-dose aspirin and losartan appears to elicit a higher cardiovascular protection than losartan alone in hypertensive patients but the mechanisms involved have not been elucidated. The acetylation of cyclooxygenase 2 (COX-2) by aspirin induces the synthesis of 15-epi-lipoxins (15-epi-LXs) which act as stop signals in inflammation and also limit oxidative damage, induce vasodilation and improve renal function. The study was aimed at evaluating if low-dose aspirin improves renal function and the antihypertensive efficacy in hypertensive rats treated with losartan and whether this putative protective effect is associated with changes in COX-2 derived eicosanoids and oxidative stress.

Twelve week-old spontaneously hypertensive rats (SHR) were assigned to 4 groups: control, aspirin (10 mg/kg/day, 8 days), losartan (15 mg/kg/day, 8 days) and losartan+aspirin (8 days). Systolic blood pressure (SBP), renal function, renal COX-2 expression and the plasma and/or urinary levels of 15-epi-LXA4, 11-dehydro-thromboxane B2 and 8-isoprostane were evaluated.

The combined treatment with aspirin and losartan in SHR was associated with significantly lower levels of systolic blood pressure, proteinuria, plasma urea, plasma uric acid, urinary excretion of 11-dehydro-thromboxane B2 and 8-isoprostane and renal COX-2 expression, when compared to losartan alone. Urinary 15-epi-LXA4 was also tendentially higher in SHR treated with aspirin or losartan+aspirin.

Thus, it is concluded that the addition of low-dose aspirin to losartan improves the antihypertensive efficacy and renal function in SHR. These effects appear to be related to a reduced ratio between renal eicosanoids with vasoconstrictor and pro-inflammatory activity (thromboxane A2, 8-isoprostane) and those with vasodilator, anti-inflammatory and antioxidant properties (15-epi-LXs).

### Biography

Teresa Sousa, PharmD (1999), PhD in Pharmacology (2006), is an Investigator at the Department of Pharmacology and Therapeutics, Faculty of Medicine, University of Porto. Her major research interests are oxidative stress, renin-angiotensin system and resolution of inflammation mediators in arterial hypertension and heart failure. She has received several prizes/awards, including the Poster Award from EPHAR, the Lars-Erik Gelin Conference Travel Award from the European Society for Microcirculation, the Young Investigator Prize from the Calouste Gulbenkian Foundation, the Young Investigator Prize from the Portuguese Society of Hypertension and the Alberto Ferrari Poster Prize from the European Society of Hypertension.

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