

THE SUPEROXIDE DISMUTASE AND CATALASE - LIKE ACTIVITIES OF ROSMARINIC ACID IN L-NAME INDUCED HYPERTENSIVE NEPHROPATHY

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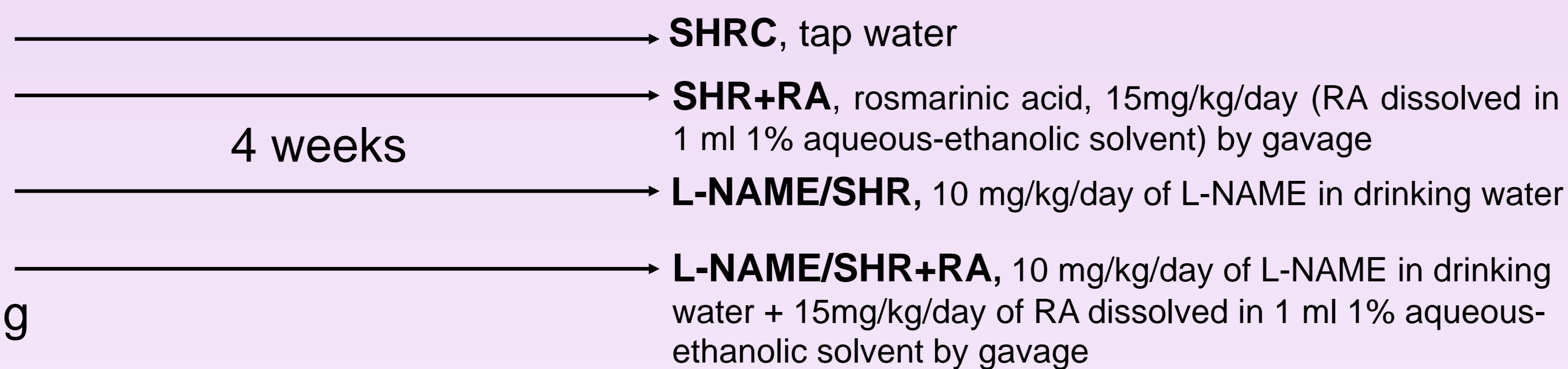
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Background Spontaneously hypertensive rats (SHR) chronically treated with an inhibitor of NO synthase, NG-nitro-L-arginine methyl ester (L-NAME), develop chronic kidney disease characterized by massive albuminuria, proteinuria, arteriolar fibrinoid necrosis and glomerular sclerosis. *Previously, we showed that rosmarinic acid (RA) supplementation could improve albuminuria in L-NAME/SHR model of hypertensive nephropathy* independently of NO bioavailability. Since albuminuria is associated with increased oxidative stress, we evaluated *whether chronic consumption of RA could affect kidney oxidative stress in L-NAME/SHRs by altering the antioxidant enzyme expression and activity.*

Experimental groups



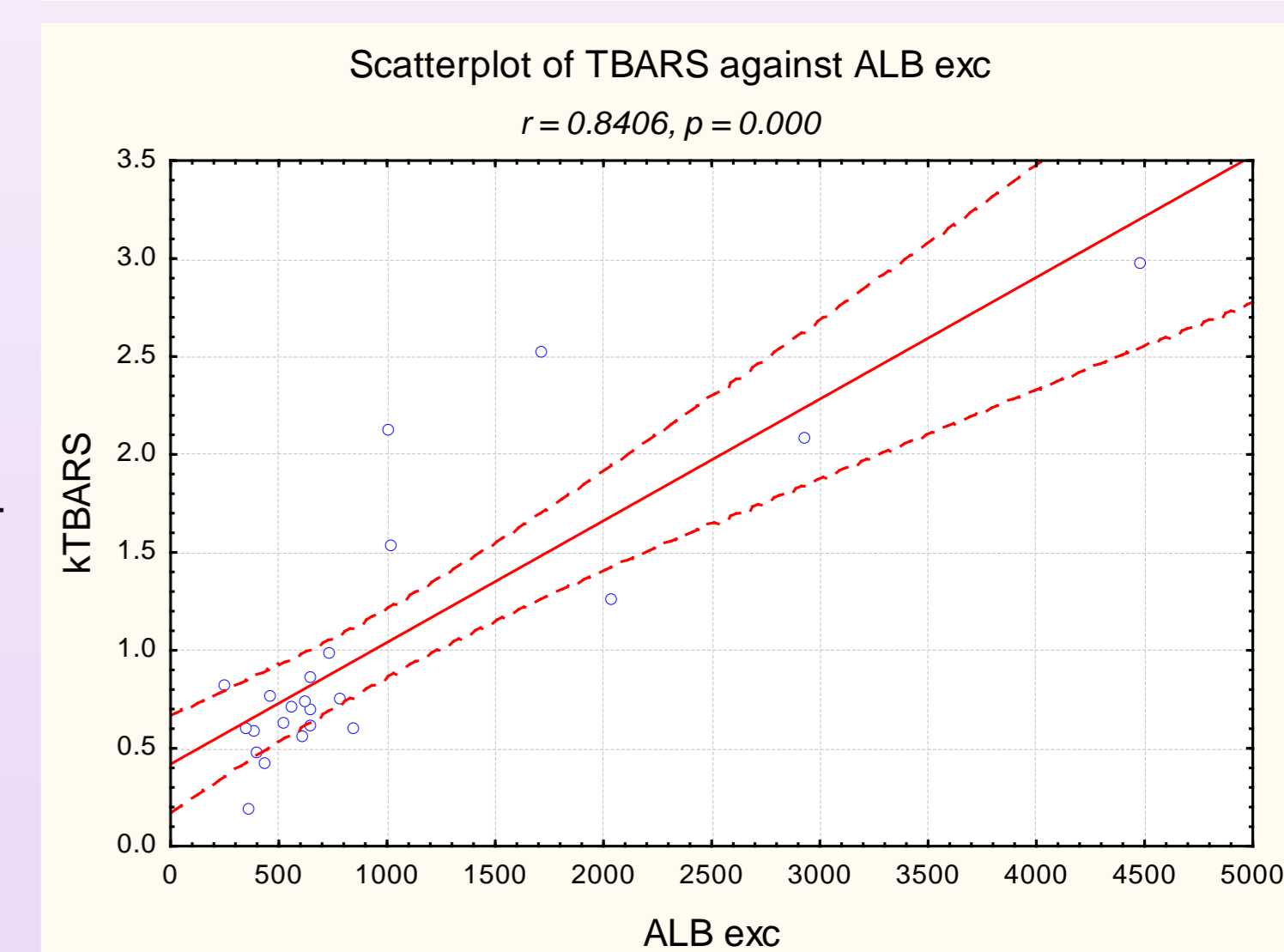
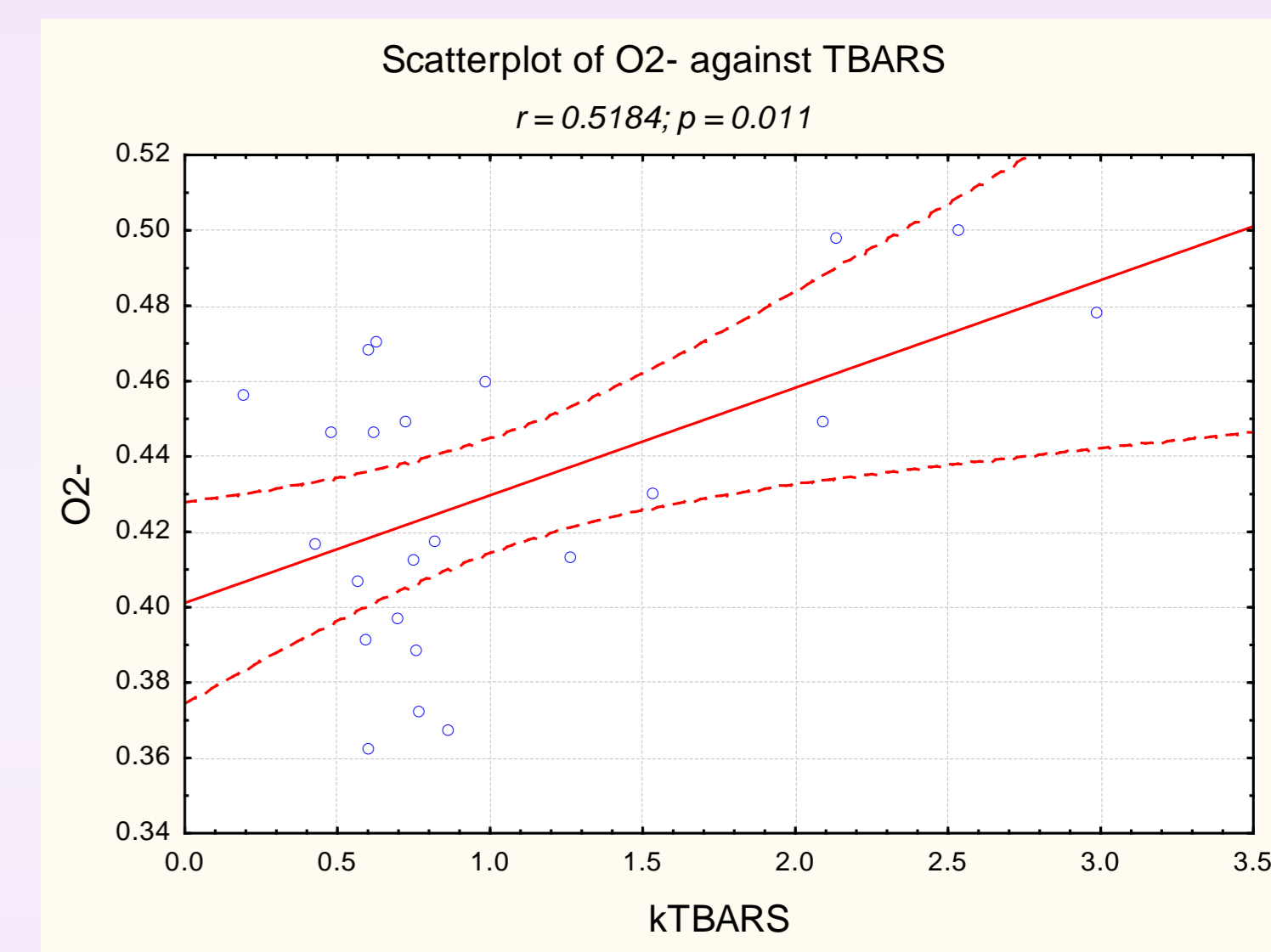
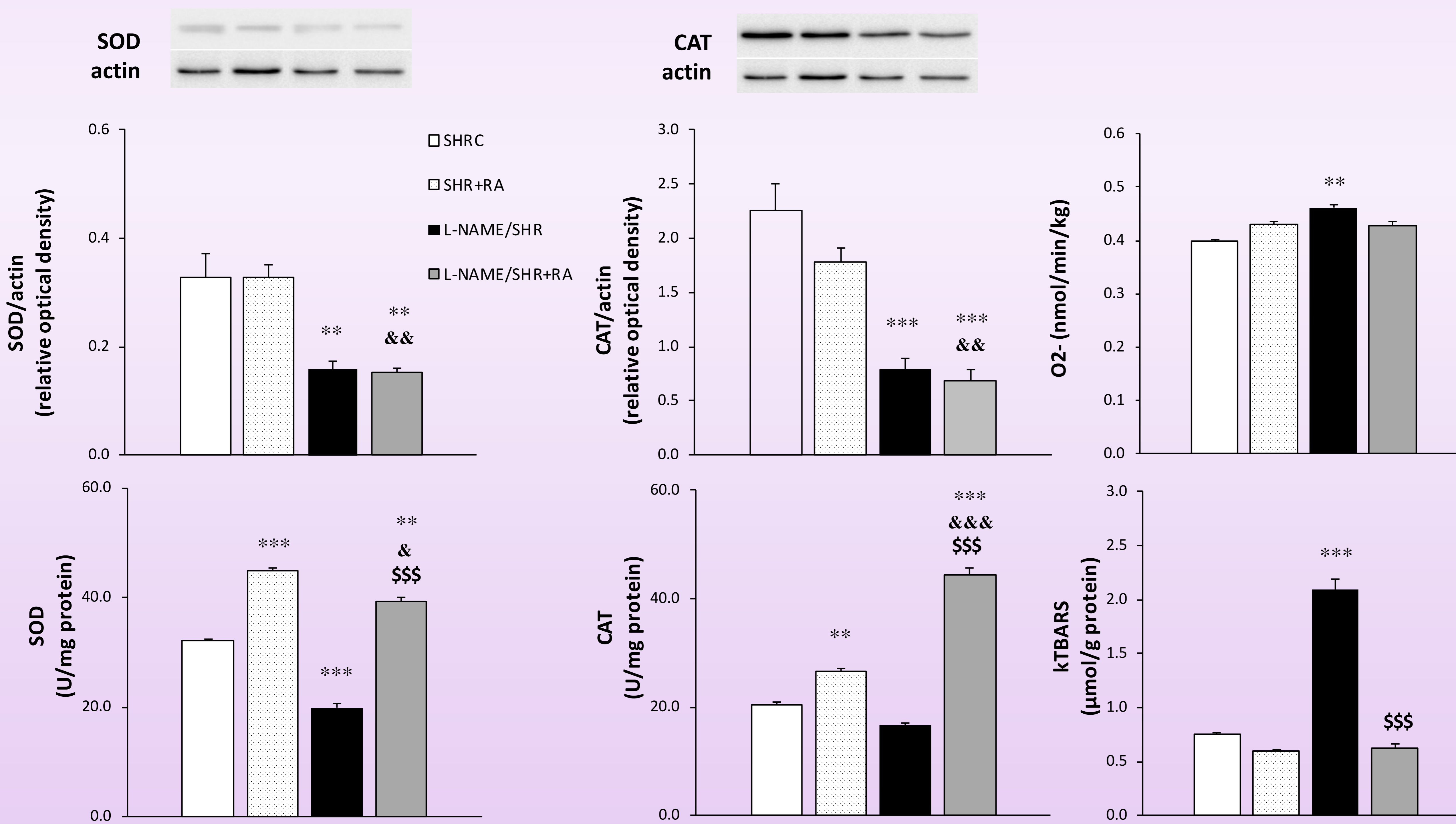
Adult ♂ SHR ~300 g



Methods

- urine albumin (for determination of urinary albumin excretion - ALBexc), kidney superoxide anion (O_2^-), kidney TBARS (kTBARS), superoxide dismutase (SOD) and catalase (CAT) activity were measured **spectrophotometrically**
- kidney SOD and CAT protein expressions were detected by **western blot**

Results



Correlations (Spreadsheet2)					
Marked correlations are significant at $p < .050$					
N=23 (Casewise deletion of missing data)					
Variable	TBARS	ALB exc	O ₂ ⁻	SODact	CATact
TBARS	1.0000	.8406	.5184	-.6752	-.4985
	$p = ---$	$p = 0.000$	$p = 0.011$	$p = 0.000$	$p = 0.015$
ALB exc	.8406	1.0000	.3280	-.5683	-.4099
	$p = 0.000$	$p = ---$	$p = 0.127$	$p = 0.005$	$p = 0.052$
O ₂ ⁻	.5184	.3280	1.0000	-.1240	-.1297
	$p = 0.011$	$p = 0.127$	$p = ---$	$p = 0.573$	$p = 0.555$
SODact	-.6752	-.5683	-.1240	1.0000	-.5174
	$p = 0.000$	$p = 0.005$	$p = 0.573$	$p = ---$	$p = 0.011$
CATact	-.4985	-.4099	-.1297	-.5174	1.0000
	$p = 0.015$	$p = 0.052$	$p = 0.555$	$p = 0.011$	$p = ---$

** $p < 0.01$, *** $p < 0.001$ vs. SHRC. && $p < 0.01$, &&& $p < 0.001$ between SHR+RA with and without L-NAME. \$\$\$ $p < 0.001$ between SHR+L-NAME with and without RA.

Conclusion Our results indicate to a close link between oxidative stress and renal dysfunction in hypertensive nephropathy and that the antioxidant efficacy of RA stems from its SOD and CAT mimetic activities.