

DISORDERS OF CATALASE ACTIVITY IN HYPERTENSIVE RETINOPATHY

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Introduction The pathobiochemical mechanism of hypertensive retinopathy (HR) is with certainty not established. High blood pressure by itself could not explain the retinal changes that occur, therefore additional pathogenetic mechanisms, such as oxidative stress/ antioxidant system imbalance, could be involved.

Keywords catalase, oxidative stress, antioxidant system, hypertensive retinopathy

Purpose The study was designed to determine serum catalase (CAT) levels, a marker of oxidative stress/ antioxidant balance and to identify whether there is a correlation between catalase levels and degree of HR.

Material and methods

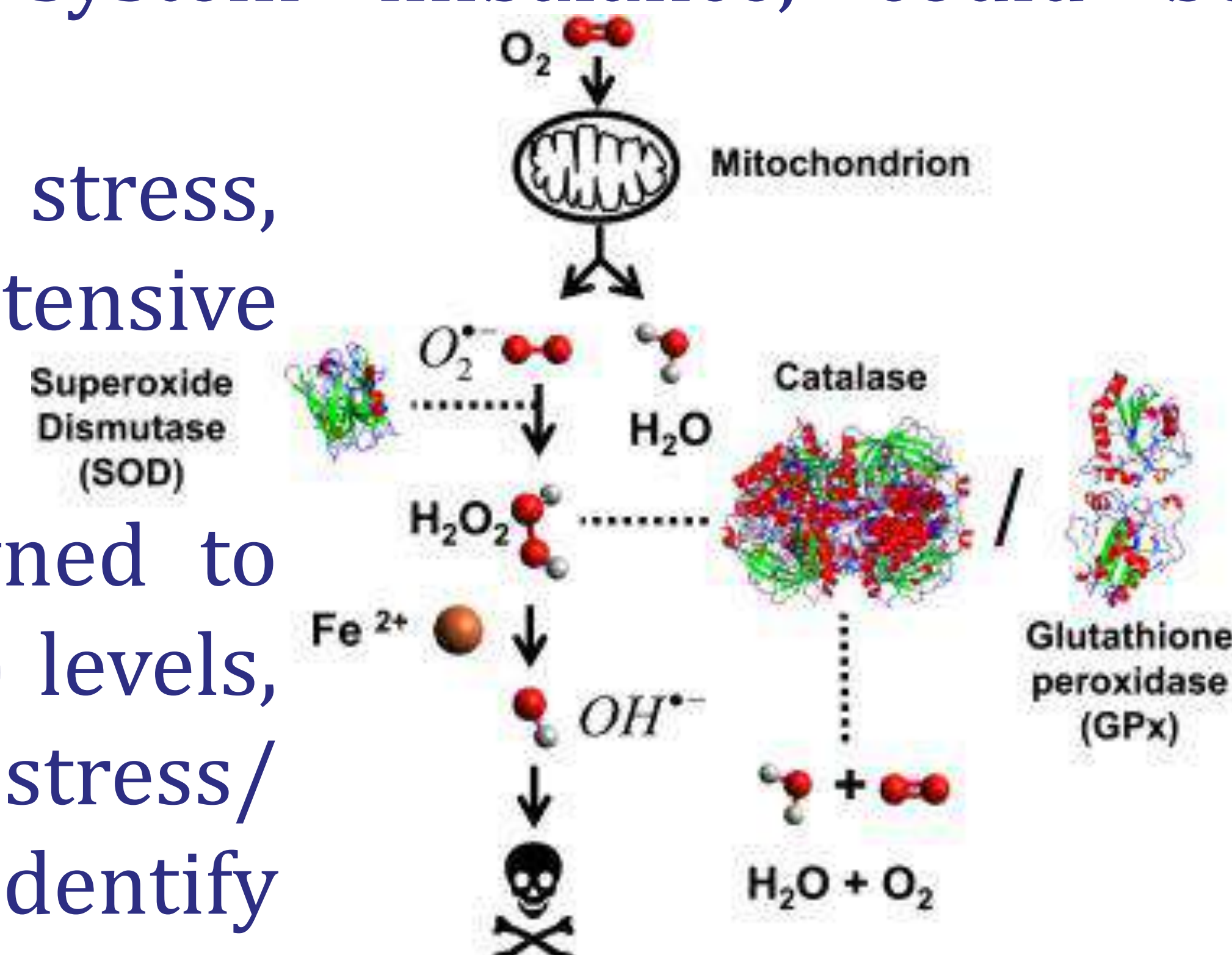
90 patients detected primarily with HR, divided according to the Keith-Wagener classification into:

- GI - 40 with HR grade I
- GII - 32 with HR grade II
- GIII - 18 with HR grade III

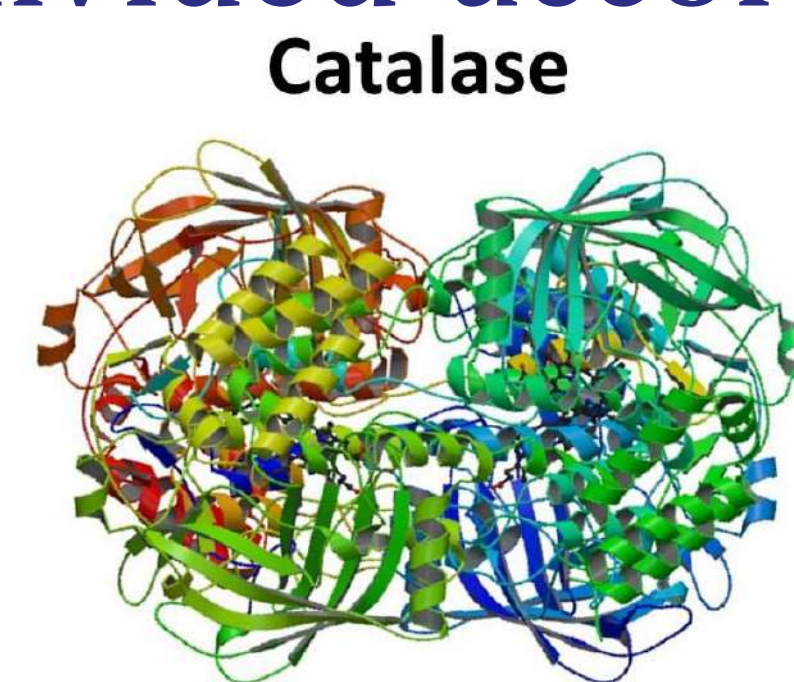
CAT activity was determined according to Koroliuk M. in the modification of Gudumac V. et al. (1996) and expressed as $M \pm DS$.

Analysis of variance (ANOVA) was used, taking age and sex as covariates, and $p < 0.05$ being statistically significant.

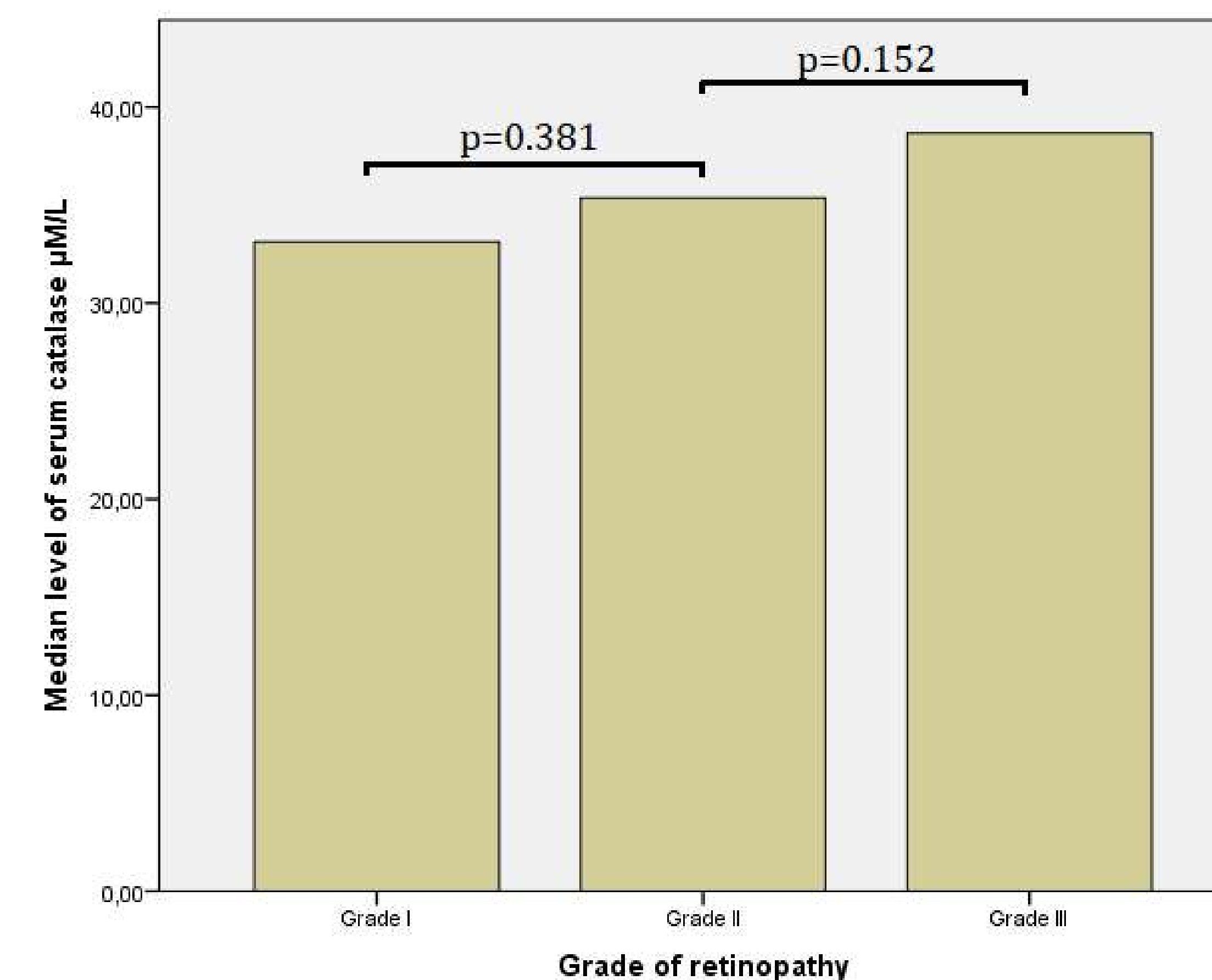
Results There was a tendency for CAT activity to increase in the blood of patients with hypertension as HR progressed. The CAT level in GII increased compared to GI (+ 8%; $34.88 \pm 8.91 \mu\text{M} / \text{L}$ vs. $32.37 \pm 8.52 \mu\text{M} / \text{L}$, $p = 0.381$), as well as in patients in GIII compared to GII (+ 11%; $38.67 \pm 17.35 \mu\text{M} / \text{L}$ vs. $34.88 \pm 8.91 \mu\text{M} / \text{L}$, $p = 0.152$). The CAT level did not show a correlation with the HR degree ($r = 0.057$; $p = 0.293$). CAT is responsible for neutralizing peroxides generated under conditions of oxidative stress. The maintenance of activity at a normal level may attest the minor involvement of peroxides in retinal damage in hypertension.



<http://www.sciencedirect.com/science/article/pii/S0079610717302936>



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		Catalase in serum
Retinopathy	Correlation coefficient	0.057
	Statistical significance, 2-tailed (p)	0.293

Conclusions The increase in the severity of hypertensive retinopathy is not correlated with increased serum catalase activity. Therefore, further studies are needed to conclude the role of the oxidative stress / antioxidant system balance in the development of hypertensive retinopathy.