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Sesamin enhances nitric oxide bioactivity in aortas of spontaneously hypertensive rats

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Abstract: OBJECTIVE To explore the underlying mechanisms involved in the effect of sesamin on aortic NO bioactivity in spontaneously hypertensive rat (SHR). **METHODS** Sesamin was orally administered for consecutive 8 weeks in SHR. Systolic blood pressure (SBP) was measured using the tail-cuff method. The aortas were isolated and *in vitro* vascular reactivity studies were performed. Superoxide anion production in carotid arteries was assessed by dihydroethidium fluorescence staining. The protein expression of endothelial nitric oxide synthase (eNOS), phosphorylated eNOS (P-eNOS), dihydrofolate reductase (DHFR), nicotinamide adenine dinucleotide phosphate (NADPH) oxidase subunit p47phox and copper, zinc-superoxide dismutase (Cu/Zn-SOD) in aortas was detected by Western blotting. The dimeric form of eNOS in aortas was determined by low-temperature SDS-PAGE. Aortic level of nitrotyrosine and activities of antioxidant enzymes, namely, total SOD (T-SOD), glutathione peroxidase (GPx) and catalase were also detected. **RESULTS** In SHR, sesamin treatment reduced SBP, improved vascular relaxation induced by acetylcholine and enhanced aortic NO bioactivity. Sesamin treatment enhanced NO biosynthesis in SHR aortas was due to upregulated P-eNOS and suppressed eNOS uncoupling, and the latter effect might be attributed to decreased nitrotyrosine and upregulated DHFR. Sesamin also reduced the NO oxidative inactivation and decreased the superoxide anion production through downregulation of p47phox and amelioration of eNOS uncoupling. In addition, sesamin treatment did not alter the levels of GPx and catalase activity but obviously reduced the compensatory elevated T-SOD activity and Cu/Zn-SOD protein expression. **CONCLUSION** Chronic treatment with sesamin could reduce hypertension and improve endothelial dysfunction through enhancement of NO bioactivity in SHRs aortas.

Key words: sesamin; spontaneously hypertensive rat; endothelial dysfunction; nitric oxide

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Combined antihypertensive effect of GSY and metoprolol, based on endothelium-dependent vasodilatation function

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Abstract: OBJECTIVE To investigate the synergistic effect on dilating blood vessels and anti-hypertension of GYS combined with metoprolol. **METHODS** ① Spontaneously hypertensive rats (SHR) were administered orally with the vehicle, GSY, metoprolol or GSY combined with metoprolol for 4 weeks. Blood pressure, which included SBP, DBP and MBP was measured by a noninvasive method every week. At the end of 4 weeks, blood was drawn from the ophthalmic venous plexus to determine blood fat levels (serum TC, TG, LDL-c, HDL-c), liver function (serum ALT, AST), and kidney function (serum BUN, UA and Cr) by the ACCUTE (TBA-40FR) automatic. ② The aortae of normal SD rats