Anesthetics cause profound alterations in respiratory and cardiovascular systems. Our experiments demonstrated that different anesthetics caused different changes in blood pressure regulating components. The role of particular BP regulating systems was disclosed by their selective inhibition - sympathetic nervous system blocked by pentolinium (peripheral ganglionic blockade), renin-angiotensin system by captopril (angiotensin converting enzyme blocker) and nitric oxide production by L-NAME (nitric oxide synthase blocker). Components of blood pressure regulating mechanisms in conscious normotensive Wistar rats and spontaneously hypertensive rats were compared with four different groups of anesthetized rats by pentobarbital, ketamine-xylazine, chloralose-urethane and isoflurane. Each anesthesia caused different hemodynamic changes. If hemodynamic conditions should be similar to conscious rats, the most suitable anesthetic is pentobarbital.

L-serine-induced effects represent endothelium-derived hyperpolarizing factor (EDHF)-mediated response, which is a type of endothelium-dependent regulation of vascular tone, independent of nitric oxide and prostacyclin production. Pronounced L-serine effects on blood pressure were shown in NO-deficient type of hypertension. Our study demonstrated its pronounced effects in Dahl rats with salt-induced hypertension. In conscious animals, the type of L-serine induced effects depends whether sympathetic nervous system, renin-angiotensin system or nitric oxide production are blocked.