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Pharmacological Actions of Dopamine
Sulfoconjugate on Cardiovascular System

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Pharmacological actions of dopamine 4–sulfate on the cardiovascular system were examined and compared with those of dopamine. Dopamine 4–sulfate, used in the present study, was minimally contaminated with dopamine (less than 0.02%). Dopamine 4–sulfate at doses ranging from 0.1 to 1 μmol/kg did not elicit any appreciable changes in systemic blood pressure and heart rate of anesthetized rabbits. Contractile activity and heart rate of isolated perfused rat heart were also unaffected by the agent. Dopamine 4–sulfate at concentrations of 1 and 0.3 mM, induced a significant contraction of isolated rabbit renal and femoral arteries, respectively, but not in the aorta. The extent of the increase in tension development induced by 1 mM dopamine 4–sulfate in the femoral artery, was almost similar to that induced by 3 μM dopamine. The maximal tension development induced by 1 mM dopamine 4–sulfate in the femoral artery occurred more slowly than that induced by 3 μM dopamine. Furthermore, dopamine 4–sulfate–induced increase in tension development, like that of dopamine itself, was inhibited by 0.3 μM phentolamine and 0.1 μM haloperidol. Any appreciable conversion of dopamine 4–sulfate into dopamine was not seen in the medium of the organ bath in vitro during the experiment. The results suggest that dopamine sulfoconjugate exerts little effect on the cardiovascular system and, if any, induces a constriction of some vascular beds without conversion into dopamine.

抄録 ドーパミン硫酸抱合体の心血管系に及ぼす薬理学的作用を検討し、ドーパミン硫酸抱合体の0.1～1 μ mol/kgの用量では麻酔家兔の全身血圧、心拍数になら影響を及ぼさなかった。収縮力と心拍数には摘出心臓においても影響がなかった。ドーパミン硫酸抱合体の1～0.3mMで家兔摘出腎臓動脈と大腿動脈の収縮を認めた。この作用強度はドーパミンのそれの1／300程度であった。結果はドーパミン硫酸抱合体自体では心血管系に対してほとんど影響を及ぼさないことを示唆した。