

阿米替林对兔基底动脉和肠系膜动脉环的抑制作用

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Inhibited effects of amitriptyline on rabbit basilar and mesenteric artery rings

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ABSTRACT The effects of amitriptyline (Ami) on isolated rabbit basilar and mesenteric artery rings were studied and compared with verapamil (Ver). Ami inhibited the contraction of the rabbit basilar and mesenteric artery rings evoked by KCl, CaCl₂ and norepinephrine, noncompetitively. The pD'_2 values for Ami to antagonize effects of KCl, CaCl₂, NE on both arteries were 5.79 ± 0.10 and 4.97 ± 0.12 ($P < 0.01$), 4.50 ± 0.30 and 4.58 ± 0.12 ($P > 0.05$), 5.80 ± 0.13 and 5.56 ± 0.12 ($P < 0.01$), respectively. The characteristics of such effects of Ami were the same as Ver. The results suggest that Ami may block calcium channels and inhibit rabbit basilar artery selectively.

KEY WORDS amitriptyline; verapamil; basilar artery; mesenteric arteries; potassium chloride; calcium chloride; norepinephrine; drug dose-response relationship

摘要 Ami可非竞争性拮抗KCl、CaCl₂和NE对离体兔基底动脉和肠系膜动脉的收缩作用。拮抗KCl收缩此二动脉的 pD'_2 值分别为 5.79 ± 0.10 和 4.97 ± 0.12 ($P < 0.01$)。拮抗CaCl₂收缩此二动脉的 pD'_2 值分别为 4.5 ± 0.3 和 4.58 ± 0.12 ($P > 0.05$)。拮抗NE收缩此二动脉的 pD'_2 值分别为 5.80 ± 0.13 、 5.56 ± 0.12 ($P < 0.01$)。其作用性质与Ver相同。

关键词 阿米替林; 维拉帕米; 基底动脉; 肠系膜动脉; 氯化钾; 氯化钙; 去甲肾上腺素; 药物剂量-效应关系

阿米替林(amitriptyline, Ami)为三环类抗抑郁药, 近年在观察抗抑郁药、治疗偏头痛药

和钙拮抗剂之间的关系时注意到:某些抗抑郁药和治疗偏头痛药具有钙拮抗作用, 抗抑郁药可治疗偏头痛, 某些治疗偏头痛药可抗抑郁, 钙拮抗剂兼有治疗情感性精神病和偏头痛的作用, 提出抗抑郁药治疗作用的彻底解释应包括它们对脑血管系统作用的讨论^(1,2)。Ami对兔脑血管的作用未见文献报道。本实验以维拉帕米(verapamil, Ver)为对照研究了Ami对兔基底动脉和肠系膜动脉的作用, 旨在观察其对脑血管作用的选择性及其机理。

MATERIALS AND METHODS

Ami常州第四制药厂赠送; Ver芬兰Orion产品; 重酒石酸去甲肾上腺素(norepinephrine bitartratis, NE)广州明兴制药厂产品。

制备基底动脉、肠系膜动脉环和离体实验法均见前文⁽³⁾。注意不损伤动脉内膜。

KCl、NE量-效曲线 按文献⁽⁴⁾做兔基底动脉和肠系膜动脉KCl、NE量-效曲线, 观察Ami和Ver对它们的影响, 分别计算 pD'_2 值。

CaCl₂量-效曲线 按文献⁽⁴⁾在高K⁺等渗无Ca²⁺K-H液中做兔基底动脉和肠系膜动脉量效曲线, 观察Ami和Ver对其影响, 求 pD'_2 。

RESULTS

Ami对KCl量-效曲线的作用 Ami和Ver可非竞争性拮抗KCl对兔基底动脉和肠系膜动脉的收缩作用, 使量-效曲线最大反应压低, 曲线右移(Fig 1)。Ami对此二动脉作用的 pD'_2 值分别为 5.79 ± 0.10 和 4.97 ± 0.12 ; Ver对此二动脉作用的 pD'_2 值分别为 $6.23 \pm$

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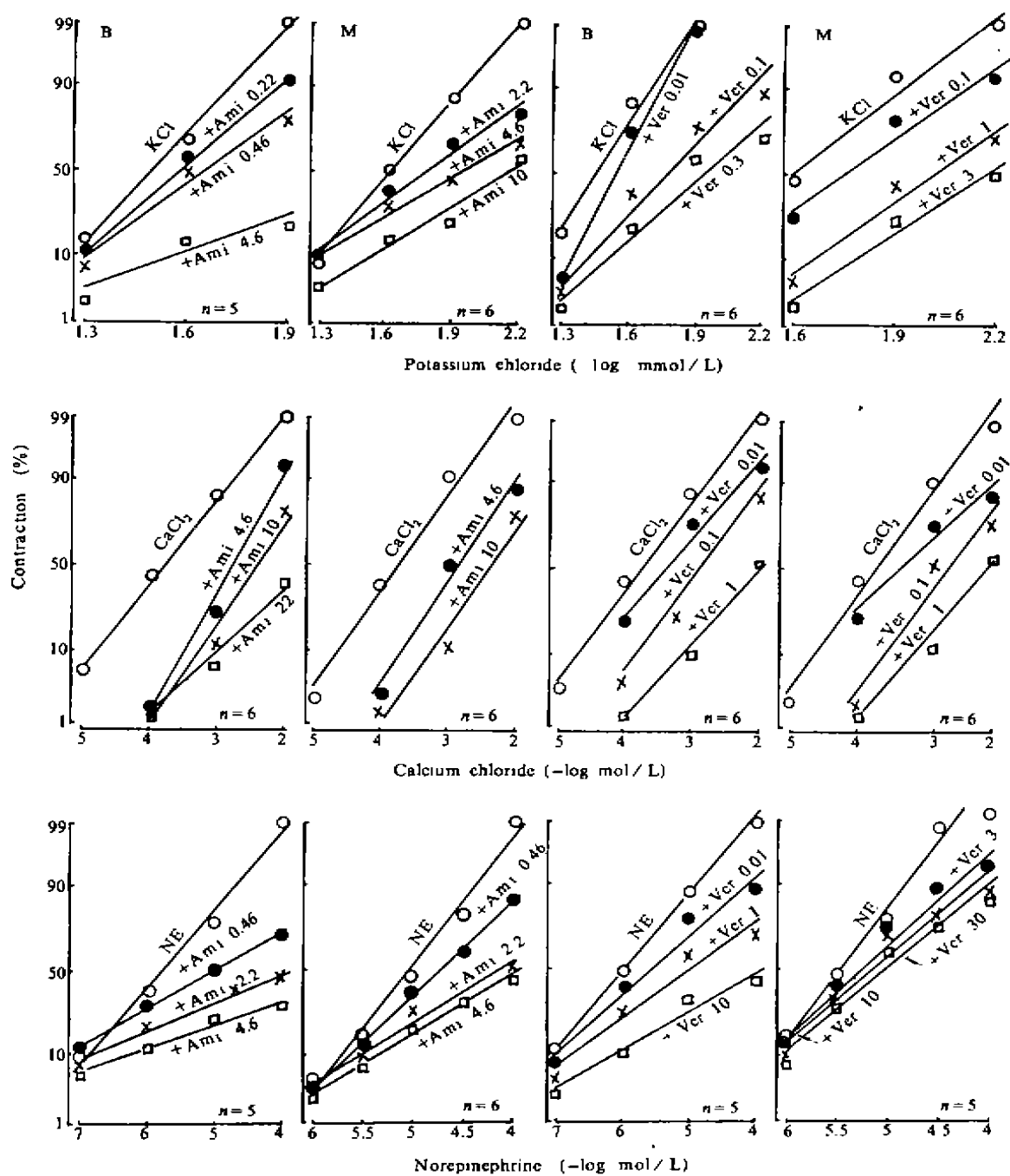


Fig 1. Effects of amitriptyline (Aml, $\mu\text{mol/L}$) and verapamil (Ver, $\mu\text{mol/L}$) on rabbit basilar (B) or mesenteric (M) artery rings to KCl, CaCl₂ and norepinephrine (NE).

0.10 和 5.71 ± 0.22 , Ami 和 Ver 对基底动脉作用更强($P < 0.01$).

Ami 对 CaCl_2 量-效曲线的作用 Ami 和 Ver 可非竞争性拮抗 CaCl_2 对兔基底动脉和肠系膜动脉的收缩作用, 表现为量-效曲线的最大反应压低, 曲线右移(Fig 1). Ami 对此二动脉作用的 pD'_2 值分别为 4.5 ± 0.3 和 4.58 ± 0.12 . Ver 对此二动脉作用的 pD'_2 值分别为 6.4 ± 0.5 , 6.5 ± 0.6 , 均无显著性差异($P > 0.05$).

Ami 对 NE 量-效曲线的作用 Ami 和 Ver 非竞争性拮抗 NE 对兔基底动脉和肠系膜动脉的收缩作用, 使量-效曲线的最大反应压低, 曲线右移(Fig 1). Ami 对此二动脉作用的 pD'_2 值分别为 5.80 ± 0.13 和 5.56 ± 0.12 . Ver 对此二动脉作用的 pD'_2 值分别为 6.0 ± 1.0 和 4.3 ± 0.3 , 对基底动脉抑制作用更强($P < 0.01$).

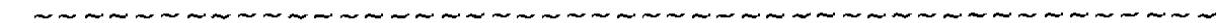
DISCUSSION

Ami 对 KCl, CaCl_2 , NE 引起的兔基底动脉和肠系膜动脉收缩呈非竞争性拮抗, 作用

特点与 Ver 相似, 表明其具有钙拮抗作用. 已证明钙拮抗剂对脑血管具有选择性作用^[5], Ami 对 KCl, NE 引起的兔基底动脉的收缩呈选择性抑制, 其对兔基底动脉 KCl 量-效曲线抑制作用浓度在 0.07 到 $1.4 \mu\text{g}/\text{ml}$ 之间(最大收缩为对照值的 $90 \pm 5\%$ 到 $22 \pm 4\%$), 抗抑郁治疗时血药浓度可达到该浓度, 这使其有可能舒张脑血管而较少影响周围血管, 该舒张作用在抗抑郁治疗中的重要性值得进一步探讨.

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人参多糖降血糖和肝糖原的作用

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Effects of ginseng polysaccharides on reducing blood glucose and liver glycogen

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ABSTRACT Ginseng polysaccharides (GH_1) 50-

200 mg/kg ip or sc reduced blood glucose and liver glycogen of mice. Adrenalectomy did not affect this action. GH_1 increased the content of pyruvic acid, but decreased the content of lactic acid by weakening the activity of lactate dehydrogenase. GH_1 accelerated oxidative-phosphorylation of carbohydrate since the activities of succinate dehydrogenase (SDH) and cytochrome oxidase (CCO) were obviously stimulated. Besides the promotion of the activity of SDH in human embryonic lung fibroblasts (HELFL), GH_1 decreased the content of polysaccharides in

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