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COMPARATIVE EFFECTS OF CAPTOPRIL, LOSARTAN AND PD123319 ON THE MEMORY PROCESSES IN RATS

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Aims: Renin-angiotensin system in the central nervous system participates in the processing of sensory information, learning and memory processes. Inhibitors of renin-angiotensin system, particularly angiotensin converting enzyme inhibitors and angiotensin II receptor antagonists are reported to have potential effects in various learning and memory processes. In the present study we assessed the effects of angiotensin converting enzyme inhibitor captopril and the angiotensin AT1 receptors antagonists, losartan and PD123319, in learning and memory processes by means of Y-maze and passive avoidance tasks. The anxiety state was measured in elevated plus maze.

Methods: Male Wistar rats were divided into three groups: 1. sham-operated; 2. Captopril; 3. Losartan; 4. PD123319. All drugs were stereotaxically icv injected, rather than captopril (i.p.). Learning and memory tests began 2 weeks after the operation, and the ability of the rats to acquire the operant task was studied by means of Y-maze task and passive avoidance task, respectively. The anxiety state was measured in elevated plus maze.

Results: Captopril, losartan and PD123319 significantly impaired spatial memory in Y-maze task, suggesting significant effects on short-term memory. In passive avoidance task, all drugs, significantly decreased step-through-latency, suggesting significant effects on long-term memory. In elevated plus maze measuring anxiety, all drugs diminished anxiety state.

Conclusions: These results suggest the involvement of the brain renin-angiotensin system in learning and memory formation.