Minoxidil suppressed cerebral ischemic injury by direct effect on neural tissues but not by reducing blood pressure.

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Minoxidil opens ATP-sensitive potassium channel (KATP) which is an inwardly rectifying potassium channel, which expressed in the heart, kidney, blood vessel and brain. Minoxidil was developed as an anti-hypertension agent and is now clinically used as a hair restorer. Minoxidil is also attracting attention as a treatment aimed at protecting against heart and brain ischemic damage. However, the underlying mechanism is not clear. We have reported that administration of minoxidil suppressed the damage of nerve tissue after cerebral ischemia, while it was unclear whether this was a direct action of nerve tissue or a cause of lowering blood pressure. Here, we examined whether another drug administration that produces the same blood pressure lowering effect as minoxidil suppresses damage due to cerebral ischemia. Losartan alone and doxazosin alone showed a transient decrease in blood pressure, but the combined use of both drugs resulted in a sustained decrease in blood pressure equivalent to minoxidil. Damage caused by transient ischemia model of middle cerebral artery occlusion in C57/BL mice was suppressed by minoxidil administration, but the combination of losartan and doxazosin did not protect. These results suggested that the neuroprotective effect of minoxidil was not related to the blood pressure lowering effect.