Objectives: To identify the effects of exogenous Angiostension II (AngII) on the Hypoperturbation-Activated Cyclic Nucleotide-Gated Channel (HCN) current and its mechanisms in Neonatal Rat Ventricles Cardiomyocytes (NRVM).

Methods: NRVM from 1- to 3-day-old Wistar rats were prepared by collagenase digestion, and incubated in 37°C, 95% CO₂ for patch-clamp recording. HCN channel protein expression was detected by western blot analysis.

Results: Our data shown that exposure (-20 min) of NRVM to AngII (100 μmol/L) markedly increased If density (4.7±1.0 pA/pF vs. 11.7±1.1 pA/pF) along increased conductance (Gmax: 48.7±6.6 pS/pF vs. 112.6±4.1 pS/pF), a shift in activation voltage (V1/2) to more positive potentials (+81.2±1.6 mV vs. -64.7±2.0 mV) and increase rate of activation (τact): 243±24.7 ms vs. 337.5±24.9 ms. Moreover, stimulation by AngII was largely inhibited by the non-specific tyrosine kinase blocker genistein (1μmol/L) or the C-Specific inhibitor P2P (10 μmol/L). Augmented tyrosine phosphorylation of HCN2 channels with AngII treatment by group. Tissue angiotensin II expression was increased in the Ang-(1-7) and control groups), or a sham operation (sham group). Three days after operation, the NRVM from 1- to 3-day-old Wister rats were prepared by collagenase digestion, and incubated in 37°C, 95% CO₂ for patch-clamp recording. HCN channel protein expression was detected by western blot analysis.

Conclusions: Our data shown that exposure (-20 min) of NRVM to AngII (100 μmol/L) markedly increased If density (4.7±1.0 pA/pF vs. 11.7±1.1 pA/pF) along increased conductance (Gmax: 48.7±6.6 pS/pF vs. 112.6±4.1 pS/pF), a shift in activation voltage (V1/2) to more positive potentials (+81.2±1.6 mV vs. -64.7±2.0 mV) and increase rate of activation (τact): 243±24.7 ms vs. 337.5±24.9 ms. Moreover, stimulation by AngII was largely inhibited by the non-specific tyrosine kinase blocker genistein (1μmol/L) or the C-Specific inhibitor P2P (10 μmol/L). Augmented tyrosine phosphorylation of HCN2 channels with AngII treatment by group. Tissue angiotensin II expression was increased in the Ang-(1-7) and control groups), or a sham operation (sham group). Three days after operation, the NRVM from 1- to 3-day-old Wister rats were prepared by collagenase digestion, and incubated in 37°C, 95% CO₂ for patch-clamp recording. HCN channel protein expression was detected by western blot analysis.

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