

SIGNAL WAYS OF HYPOXIA INDUCED MYOCARDIAL PROTECTION

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Role of kinases in hypoxia induced myocardial protection is not fully investigated. The aim was to determine participation of Akt and GSK-3beta kinases in hypoxic preconditioning and/or remodeling of heart. Male Wistar rats were exposed to the hypoxic preconditioning by "lifting" in a barochamber at 5600 m during 3 h. Other group of rats was previously adapted to chronic hypoxia at an altitude of 2100 m above sea level. Expression of Akt and GSK-3beta proteins was estimated by Western blotting. It was shown that hypoxic preconditioning led to strong induction of Akt expression in both heart ventricles, in the left one this effect was more pronounced in the late window of preconditioning. The expression of GSK-3beta was moderately increased and not different in heart ventricles. Since role of PI3K/Akt signaling in cardioprotection is recognized the ambiguous, we have compared kinase expression values and caspase-3 activity in heart tissues. It was shown the close inverse relationship between the levels of Akt expression and the apoptosis development. It confirms the anti-apoptotic role of Akt kinase under late preconditioning. In adapted rats, the higher level of Akt expression correlated with right ventricle hypertrophy was found. However, after hypoxic preconditioning, Akt-mediated signaling pathways were suppressed, and GSK-3beta-mediated were prevailed. Thus, it may indicate anti-hypertrophic role of GSK-3beta kinase under heart remodeling. *This work was supported by grant of NAS of Ukraine, and by joint grant of SFFRs of Ukraine and Russia, No F53.4/074.*