INVESTIGATION OF RESVERATROL'S PROTECTIVE AND ANTI-INFLAMMATORY EFFECTS ON THORACIC AORTA AND BLOOD PLASMA OF RATS UNDER UNPREDICTABLE CHRONIC MILD STRESS (UCMS) MODEL

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Abstract

Experimental and clinical findings previously established that psychological stress may associated with cardiovascular diseases owing to inflammation. Pro-inflammatory cytokines disrupt endothelium related vasorelaxation in vascular beds, reduce expression of nitric oxide synthase. Resveratrol (trans-3,5,4-trihydroxystilbene) has mission about anti-inflammatory mechanism and cardioprotection. In our study, animals were allocated into four groups (n=6 per group): control group (animals not exposed to UCMS), stress group (animals exposed to UCMS), resveratrol group (animals treated with resveratrol (20 mg/kg/day, i.p.,pending 12 weeks)), stress+resveratrol group (animals exposed to UCMS while treated with resveratrol). At end of 12-week period of UCMS, thoracic aortas were extracted under anesthesia, placed in organ chambers for isometric tension measurements, systolic blood pressure was examined with tail cuff method, and alterations in body weights were observed. To investigate impacts of UCMS on circulating inflammatory markers, we measured serum concentration level of TNF-α, IL1β, IL6, CRP, MCP-1 and ICAM1 by ELISA. RT-PCR was performed with eNOS, TNF-α, IL1β, IL6, CRP, MCP-1 and ICAM1 genes for thoracic aortas and blood plasma. Thoracic aortas were stained immunohistochemically with eNOS antibody and were labelled with eNOS and ICAM1 antibodies by western blotting. Statistical analyzes were performed. UCMS broke down endothelium related vasorelaxation and led to reduction in eNOS immunoreactivity. Taken advantages of utility of resveratrol, we observed that this impairment was fixed with chronic resveratrol administration and concluded that resveratrol had curative feature for vascular function under stress conditions.

Key Words: Resveratrol, Stress, Vasorelaxation, Cardioprotection, Inflammation

THIAMINE-MEDIATED CELLULAR STRESS RESPONSE RELATED TO GLUCOSE METABOLISM IN *SCHIZOSACCHAROMYCES POMBE*

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Abstract

Thiamine (vitamin B1) is a member of B-vitamin family that is water soluble. There are many forms of thiamine in the cells; thiamine diphosphate (ThDP), biological active form of thiamine, is a well-recognized cofactor for essential enzymes of carbonhydrate, lipid and aminoacid metabolism with Mg. Recently, it has been thought that thiamine could also be predominant within the stress response in organisms. Expression of genes encoding some enzymes involved in thiamine metabolism in *S. pombe* has also been shown in the *ird11* mutant, which is resistant to glucose suppression, which increases under oxidative stress. The current work aimed to investigate the effect of thiamine on stress responses to oxidative, osmotic, and heat stresses in the fission yeast *S. pombe*. For this purpose, we carried out a research while three stress conditions were performed during existence or absence of thiamine. This research, showing that the presence of thiamine does not affect general stress response mechanisms, and in addition under the oxidative stress condition enhances the cell viability and regulates the gene expression level of thiamine-dependent enzymes, suggests that thiamine-mediated stress response is may be a result of its own antioxidant property and/or associated to its glucose metabolism.

Keywords: *Schizosaccharomyces pombe,* Thiamine, Oxidative stress, Stress response, Glucose metabolism