Hyperosmotic stress activates p65/RelB NF?B in cultured cardiomyocytes with dichotomic actions on caspase activation and cell death

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NF?B is a participant in the process whereby cells adapt to stress. We have evaluated the activation of NF?B pathway by hyperosmotic stress in cultured cardiomyocytes and its role in the activation of caspase and cell death. Exposure of cultured rat cardiomyocytes to hyperosmotic conditions induced phosphorylation of IKK?/? as well as degradation of I?B?. All five members of the NF?B family were identified in cardiomyocytes. Analysis of the subcellular distribution of NF?B isoforms in response to hyperosmotic stress showed parallel migration of p65 and RelB from the cytosol to the nucleus. Measurement of the binding of NF?B to the consensus DNA ?B-site binding by EMSA revealed an oscillatory profile with maximum binding 1, 2 and 6 h after initiation of the hyperosmotic stress. Supershift analysis revealed that p65 and RelB (but not p50, p52 or cRel) were involved in the binding of NF?B to DNA. Hyperosmotic stress also resulted in activation of the NF?B-lux reporter gene, transient acti