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Regulation of the DREF Gene Expression by Oxidative Stress and Aging

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The promoters of *Drosophila* genes encoding DNA replication-related proteins contain transcription regulatory elements consisting of an 8-bp palindromic DNA replication-related element (DRE) sequence (5'-TATCGATA). The specific DRE-binding factor (DREF), a homodimer of the polypeptide with 709 amino acid residues, is a positive trans-acting factor for transcription of DRE-containing genes. While the effects on the mutation in the DNA replication-related element (DRE) in cultured cells and ectopic expression of DREF in *Drosophila* imaginal discs have been studied extensively, the regulation of DREF gene expression by oxidative stresses, including aging, have remained unclear. Oxidative stress has been known to be involved in cell proliferation, tumor growth and apoptosis. In present study, we investigated that the DREF gene expression was regulated by oxidative stresses using *Drosophila* Kc cells and transgenic flies bearing *Luc* reporter gene. And the regulation of DREF gene expression by aging was detected in DREF-*Luc* transgenic flies. The expression of DREF was induced in *Drosophila* Kc cells and transgenic flies by LPS or wound. And also we detected a significant upregulation of DREF gene expression according to aging process. Our results suggest that the regulation of DREF gene expression is influenced by exogenous reactive oxygen species (ROS) and aging.