

Homology of Heat Shock Protein 70 (HSP70) in Human and Mouse Testis

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The 70kDa family of stress proteins is highly conserved showing structural and functional homology. In mammals several isoforms exist: a constitutive isoform of Hsp70 (Hsp73) is thought to act as chaperones for other cellular proteins under non-stress conditions. By contrast, the stress-inducible isoform of Hsp70 (Hsp72) is generally not expressed in unstressed cells; however, upon exposure to stressful conditions, Hsp72 is highly inducible. During the conditions of stress, both Hsp73 and Hsp72 are thought to bind to damaged and misfolded polypeptides, and facilitate their repair. Extracts from mouse, heat-treated and non-treated testes, as well as human testes were obtained, separated electrophoretically, and the Hsp70 protein expression was studied by Western blot analysis. Homology of the two isoforms was detected by employing an absorption method. Polyclonal anti-Hsp70 antibody (DACO) recognized both isoforms in mouse heat-treated testis while in non-treated only constitutive Hsp73 protein was expressed, suggesting that inducible Hsp72 protein appears to repair the proteins whose conformation is altered by stress. After absorption of the antibody with heat-treated mouse testes extracts no specific reaction was registered by Western blotting of mouse and human extracts providing evidence for homology of the Hsp72 and Hsp73 isoforms in these mammalian species.

Key words: heat stress, heat shock proteins, Hsp70, homology, mouse and human testis.