

Functional Gene Analysis for the Protection of Male Germ Cell Injury Induced by Busulfan Treatment using cDNA Microarray Analysis

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Male germ cell apoptosis has been extensively explored in rodent. In contrast, very little is known about their susceptibility to apoptosis stimuli of developing germ cell stages at the time when germ cell depletion after busulfan treatment occurs. Furthermore, it is still unanswered how spermatogonial stem cells are resistant to busulfan treatment. We examined the change of gene expression in detail using cDNA microarray analysis of mouse testis treated with busulfan. A subtoxic dose of busulfan (40mg/kg of body weight) transiently increased 228 mRNA levels among of the 8000 genes analyzed. TagMan analysis confirmed that the mRNA levels such as defensive protein, support protein, enzymatic protein, transport protein, and hormonal protein were rapidly increased. These results were re-confirmed by real-time PCR analysis. However, the expression levels of these genes induced by busulfan treatment were significantly reduced in control testis, indicating that both of male germ cells and somatic cells after busulfan treatment induces self-defense mechanism for protection of testicular cell death. Among them, we conclude that defense proteins play a key role in testis injury induced by busulfan.

Key words) *Male germ cell, cDNA microarray, Real time PCR*