

[P-30]**Differential Changes of Gene Expression Profiles Following the Exposure to Glutaraldehyde and Dinitrochlorobenzene in CBA Mice**

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Chemical-induced adverse effects such as contact allergy and irritation have been major problems in the development of new pharmaceuticals and industrial chemicals. We investigated the changes of gene expression using the integrated model for the differentiation of chemical induced allergic and irritant skin reaction (IMDS) following topical exposure through ear skin to glutaraldehyde and dinitrochlorobenzene (DNCB) in CBA mouse. Differential index, which was defined as the ratio between auricular lymph node cell proliferation and ear skin inflammation, was 0.90 and 0.75 for 3% and 10% glutaraldehyde, and 4.84 and 7.32 for 0.3% and 1% DNCB, respectively. Changes in gene expression in ear skin tissue and auricular lymph node were analyzed using TwinChip Mouse-7.4K (Digital Genomics Com). In ear skin tissue, 68 genes were changed with more than 2 folds (up-regulated: 42, down-regulated: 26) in both glutaraldehyde and DNCB treatment groups, and 37 genes were specifically changed by glutaraldehyde (up-regulated: 27, down-regulated: 10) and 10 genes were specifically changed by DNCB (up-regulated: 9, down-regulated: 1). 24 genes were changed with more than 2 folds (up-regulated: 17, down-regulated: 7) in both treatment groups, and 5 genes were specifically changed by glutaraldehyde (up-regulated: 2, down-regulated: 3) and 4 genes were specifically changed by DNCB (up-regulated: 2, down-regulated: 2) in auricular lymph node. The specificity for change of genes was validated by quantification of specific mRNA using real-time PCR. Correlation coefficient (R) value between gene and specific mRNA was 0.926 for 10% glutaraldehyde and 0.967 for 1% DNCB in ear skin. These results indicate that IMDS with cytokine profiling could be used reliable tool to differentiate allergenic potential from irritant potential of chemicals.

Keyword: IMDS, CBA mice, Glutaraldehyde, DNCB, Gene