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Assessment of cytokine producing cells to discriminate between allergen and irritant in the local lymph node assay

Jong Kwon Lee, Jung-A Byun, Seung Hee Park, Hyung Soo Kim, Jae Hyun Park, Mi Hyun Ryu, Han Jin Choi, Juno H. Eom, and Hye Young Oh

Immunotoxicology Division, National Institute of Toxicological Research, KFDA,

A murine local lymph node assay(LLNA) has been developed as an alternative method to guinea pig maximization test for contact sensitization potential. This study was carried out to investigate the potential use of cytokine producing cells to discriminate between allergens and irritant in the LLNA. Female Balb/c mice were treated by the topical application on the dorsum of both ears with allergens, 2,4-dintirochlorobenzene(DNCB), Toluene diisocyanate(TDI), and an irritant, Sodium lauryl sulfate(SLS), once daily for three consecutives, respectively. The analyses of Interleukin(IL)-2, Interferon(IFN)-r, IL-4 and IL-10 producing cells were evaluated by flowcytometry. The allergens, DNCB and TDI increased the cell numbers and weights of auricular lymph node(LN) compared to the vehicle control. An irritant, SLS increased cellularity and weight of LN at the highest concentration. There was an increase in the percentage of IL-2+/CD4+ cells of mice treated with DNCB and TDI compared to the vehicle control. However, there was no significant increase in the percentage of IL-2+/CD4+ cells in the SLS group. We observed the similar increase in IFN-r+/CD4+ cells of mice treated DNCB and TDI, but no increase in SLS group. There were no significant changes in IL-4+/CD4+ and IL-10+/CD4+ cells of mice treated allergens and irritant. These results suggest that the analysis of IL-2 producing cells on CD4+ lymphocytes could be used in differentiating allergic from irritant responses in mice topically applied chemicals.

Keyword : LLNA, allergen, irritant, cytokine producing cells, IL-2