Society of Toxicology annual meeting May, 2000.

RESTRAINT STRESS MODIFIES DNCB-INDUCED LYMPH NODE CYTOKINE PRODUCTION, BUT NOT T CELL PROLIFERATION. MS Flint, BA Abrigo and SS Tinkle. NIOSH/CDC, Morgantown, WV, USA. Sponsor: MI Luster

The timing of a stressful event with respect to antigen exposure affects the development of the immune response. We have demonstrated that restraint applied prior to sensitization alters the ear swelling response and the pattern of cytokine production differently than restraint applied prior to challenge. We hypothesized that restraint would also modify the immune response to chemical in the draining lymph nodes. Male BALB/c mice were exposed on the dorsum of both ears on days 1, 2 and 3 with 1% or 0.5% di-nitrochlorobenzene (DNCB; n = 5) or vehicle only (n = 10), and restrained for 2 hours prior to chemical application on day 1 or day 3. We assessed T lymphocyte proliferation on day 5. To evaluate lymph node cytokine production, lymph nodes were removed on day 5 and cultured for 24, 48 and 72 hours. To assess these parameters following chemical challenge, we sensitized mice on the flank on days 1 and 2, challenged on day 6 immediately following restraint, and assessed T lymphocyte proliferation on day 7. We determined that, for all treatment paradigms, DNCB stimulated significant T cell proliferation which was not altered by restraint. Furthermore, we determined that DNCB-activated lymph node cells (LNCs) produced IL-6 and IFN-γ and that restraint enhanced both cytokines at all timepoints. For example, at 48 hours, the concentration of IFN-g in non- restrained mice measured 83.5 pg/ml, whereas restrained mice produced 232 pg/ml. IL-6 production at 48 hours measured 87.5 pg/ml in non-restrained mice and 289 pg/ml in restrained mice. These data suggest that restraint modulates the lymph node immune response to chemical through changes in cytokine production that do not alter the significantly T cell proliferation.