

[P-49]**Differential Humoral Immune Responses in Pb-exposed Mice with Different Circling Preference**

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Different circling preference of mice is a reference of inter-individual differences in their endogenous neuroimmune circuits. I have investigated relationship between differential immune responses in mice, who have same age, gender, and genetic background, and circling behavior preference. I reported the influence of inorganic lead (Pb) on host-resistance to *Listeria monocytogenes* (LM). Mice with both left- (LT) and right-circling (RT) preference became more susceptible to the LM infection by exposure to Pb; however, Pb did not alter host-resistance of mice with no circling preference (NP mice). Also, I have investigated the association of differential humoral immune responses in Pb-exposed mice with different circling preference. Pb reduced antigen-specific primary IgG2a production ($p < 0.01$) but did not alter primary IgM and IgG1 production including secondary antibody production. Pb-exposed mice with LT preference had significantly lower primary anti-KLH (Keyhole Limpet Hemocyanin) IgG1 ($p < 0.02$) and IgG2a ($p < 0.04$) titer than control mice. Pb-exposed mice with RT preference had relatively lower primary anti-KLH IgG1 and IgG2a titer than control mice. Pb down-regulated the basal serum corticosterone levels in mice with RT and LT mice. Down-regulation of the hypothalamic-pituitary-adrenal axis in RT and LT mice by Pb may associated with primary antibody responses and the lower host-resistance of Pb-exposed LT and RT mice. The results suggest that different circling preference of mice is an index of inter-individual differences in their humoral immune responses to specific antigen. This study suggests that chemical stressors may have differential effects among individuals based on endogenous differences in their neuroimmune circuits.

Keyword : neuroimmune, inorganic lead, antibody production, circling preference, corticosterone