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# Immunology

## EFFECTS OF 2,3,7,8-TETRACHLORODIBENZO-*p*-DIOXIN (TCDD) ON SPLENIC LYMPHOCYTE TRANSFORMATION IN MICE AFTER SINGLE AND REPEATED EXPOSURES

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2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD) is one of the most toxic man-made chemicals.<sup>1</sup> Manifestations of its toxicity are diffuse and include atrophy of the thymus. It had been reported to be an immunosuppressant. Buu-Hoi *et al.*<sup>2</sup> reported that TCDD produced a dose-related atrophy of the thymus at sublethal dose levels. More intense investigations revealed that TCDD depressed the delayed type tuberculin skin reactivity in young guinea pigs but not in rats.<sup>3</sup> The graft-versus-host (GVH) reactivity of mice spleen cells was also reduced.<sup>3</sup>

In a follow-up report, Vos and Moore<sup>4</sup> showed the suppression of cellular immunity in rats and mice after maternal and postnatal exposures to TCDD. Allograft (tail skin) rejection times were also prolonged in both rats and mice. The response of rat thymocytes and spleen cells to phytohemagglutinin (PHA) was reduced by TCDD exposure. No effect was noticed on the response of thymocytes to concanavalin A (Con A). Young animals were much more sensitive to the immunosuppressive effects of TCDD. Thigpen *et al.*<sup>5</sup> have reported that sublethal levels of TCDD increased mortality and shortened the incubation time in mice when challenged by *Salmonella* infection. On the other hand, there was no effect on the mortality of mice infected with pseudorabies virus (PRV).

The above findings suggest a possible selective depression of immune processes by TCDD. The cellular processes appear to be more sensitive than the humoral ones. In addition, there appears to be a species and age-dependent variation in the immunologic effects of TCDD. The effects of varying levels of TCDD on mice were hence investigated on the immune processes. In addition, the effects of a single exposure to TCDD were evaluated at different time intervals. Splenic lymphocytes from treated animals were cultured *in vitro* with and without the presence of mitogenic lectins that stimulate different populations of these cells and the incorporation of labeled thymidine was measured to evaluate the blast formation.

### METHODS

Male CD-1 mice (weighing approximately 28 g each at the beginning of the experiment) were obtained from Charles River (Wilmington, Mass.) and divided into five groups after an initial one week of acclimation. These animals were housed two