



UGA145 Part II: Immunotoxic Effects of Aflatoxin B₁ on Spleen Lymphocytes in Fischer 344 Rats



Aflatoxin B₁ (AFB₁) has been linked to suppressed cell-mediated immune status in human populations. However, these observations have not been validated in animal experiment. In this part we examined the effects of AFB₁ on spleen lymphocyte phenotypes and the secretion functions of CD4+, CD8+ T cells and CD3-CD8+ NK cells in rats.

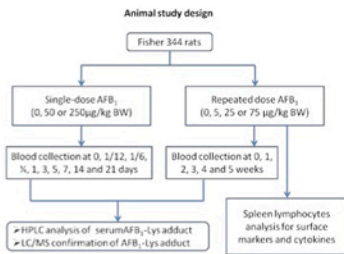


Figure 1. Flow chart of animal study design

Table 1. Immune parameters tested in this study

Immune parameters	
Surface markers	CD3, CD4, CD8, CD45RA
Cytokines	Interleukin-4 in CD4+ and CD8+ lymphocytes; Interferon-γ in CD4+ and CD8+ lymphocytes; Tumor necrosis factor-α in NK cells (CD3-CD8+)

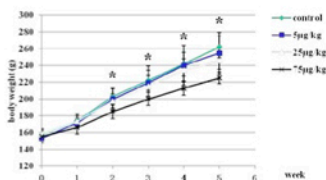


Figure 2. Effects of AFB₁ on body weight. *: P<0.05, 75µg/kg group compared to control.

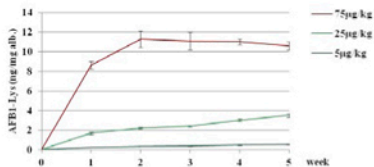


Figure 3. Serum AFB₁-Lys adduct levels after repeated doses of AFB₁ treatment

Immunotoxic effects of AFB₁

Dependent on dose and duration of exposure, AFB₁ can have either stimulatory or suppressive effects on different immune parameters in animals, as shown in table 2 and figures 4-13 (# means p < 0.05 as compared with the control).

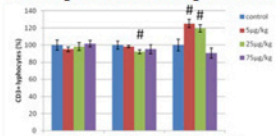


Figure 4. Effects of AFB₁ on T lymphocytes (CD3+)

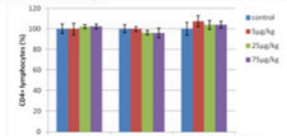


Figure 5. Effects of AFB₁ on CD4+ lymphocytes

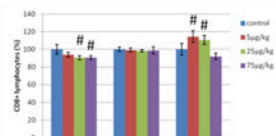


Figure 6. Effects of AFB₁ on CD8+ lymphocytes

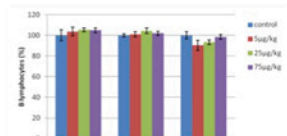


Figure 7. Effects of AFB₁ on B lymphocytes (CD45RA-)

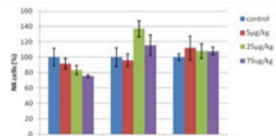


Figure 8. Effects of AFB₁ on NK cells (CD3-CD8+)

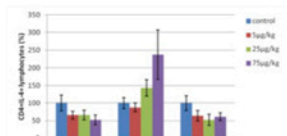


Figure 9. Effects of AFB₁ on IL-4 secretion in CD4+ lymphocytes

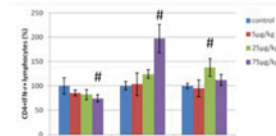


Figure 10. Effects of AFB₁ on IL-4 secretion in CD8+ lymphocytes

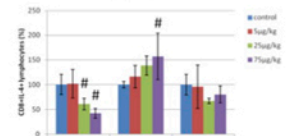


Figure 11. Effects of AFB₁ on IFN-γ secretion in CD4+ lymphocytes

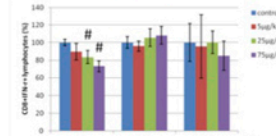


Figure 12. Effects of AFB₁ on IFN-γ secretion in CD8+ lymphocytes

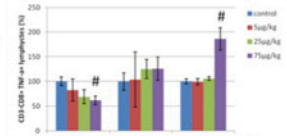


Figure 13. Effects of AFB₁ on TNF-α secretion in NK cells (CD3-CD8+)

	3 week			5 week		
	5µg/kg	25µg/kg	75µg/kg	5µg/kg	25µg/kg	75µg/kg
%CD3+ T lymphocytes	-	-	-	-	-	-
%CD4+ cytotoxic lymphocytes	-	-	-	-	-	-
%CD8+ suppressive lymphocytes	-	-	-	-	-	-
%CD45RA+ B cells	-	-	-	-	-	-
%CD3-CD8+ NK cells	-	-	-	-	-	-
%IL-4 secretion in CD4+ Lymphocytes	-	-	-	-	-	-
%IFN-γ secretion in CD4+ Lymphocytes	-	-	-	-	-	-
%IL-4 secretion in CD8+ Lymphocytes	-	-	-	-	-	-
%IFN-γ secretion in CD8+ Lymphocytes	-	-	-	-	-	-
%TNF-α secretion in CD3-CD8+ NK cells	-	-	-	-	-	-

Note: - significant increase compared to control, P<0.05; - significant decrease compared to control, P<0.05.

Contributors

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