



<b>Research No.</b>	<b>2</b>
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## **Effect of *Cryptosporidium parvum* infection on DNA damage and cytokines gene expression in blood of immunocompromised mice**

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### **Abstract:**

There are few data regarding the genotoxic and immunomodulatory effects of *Cryptosporidium parvum* (Family: Cryptosporidiidae) infection *in vivo*. Therefore, the present study evaluated the effect of *Cryptosporidium parvum* infection on DNA and gene expressions of interleukin-6 (*Il-6*) and tumor necrosis factor- $\alpha$  (*Tnf- $\alpha$* ) in blood of the immunocompromised mice. Fifty adult male Swiss albino mice were used in the present study; these were randomly divided into five groups (10 mice/each group) as follows: group I served as a healthy, uninfected control group; groups II-IV were immunosuppressed by dexamethasone, and uninfected, or infected (orally) with  $3.0 \times 10^3$  (low dose) or  $1.0 \times 10^4$  (high dose) *Cryptosporidium parvum* oocysts, respectively; group V did not receive dexamethasone and infected with  $1.0 \times 10^4$  *Cryptosporidium parvum* oocysts. DNA damage of leucocytes was assessed by flow cytometry and comet assay; the gene expression of the cytokines was performed using real-time polymerase chain reaction. The results revealed that infection with the low or the high dose of *Cryptosporidium parvum* induced DNA damage in the leucocytes of the immunosuppressed mice, as revealed by the elevations in tail length and tail moment of the comet assay compared with the healthy and immunosuppressed, uninfected, mice. In addition, significant decreases and increases in the expression of *Il-6* and *Tnf- $\alpha$*  genes, respectively, were recorded in leucocytes of the immunosuppressed, *Cryptosporidium parvum*-

infected mice in comparison with the healthy and immunosuppressed, uninfected, mice. In conclusion, *Cryptosporidium* infection induced DNA damage and augmented the changes induced in the *Il-6* and *Tnf- $\alpha$*  gene expressions in the leucocytes of the immunosuppressed mice.

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