

## **Early expression of local cytokines during systemic *Candida albicans* infection in a murine intravenous challenge model**

### **ABSTRACT**

Local cytokine production is a significant indicator for disease pathogenesis or progression. Previous studies on cytokine production during systemic *Candida albicans* (*C. albicans*) infection were solely on kidney or single cell type interaction with *C. albicans*. Therefore, the present study aimed to assess the early cytokine expression of various target organs (kidney, spleen and brain) over a 72-h time course during systemic *C. albicans* infection. The local cytokine profiles of the target organs during systemic *C. albicans* infection were measured by cytometric bead array and ELISA analysis. The results demonstrated that interleukin-6 (IL-6) and IL-2 were statistically significant ( $P<0.05$ ) in the spleen at 24 and 72 h post-infection, whereas in the kidney, IL-6 and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) were statistically significant ( $P<0.05$ ) at 24 and 72 h post-infection and CXCL-1 and transforming growth factor- $\beta$  (TGF- $\beta$ ) were statistically significant ( $P<0.05$ ) at 72 h post-infection. In the brain, IL-6 and TNF- $\alpha$  were statistically significant ( $P<0.05$ ) at 24 and 72 h post-infection, whereas TGF- $\beta$  was statistically significant ( $P<0.05$ ) at 72 h post-infection. These findings demonstrate that host immune responses were varied among target organs during systemic *C. albicans* infection. This could be important for designing targeted immunotherapy against this pathogen through immunomodulatory approaches in future exploratory research.

**Keyword:** *Candida albicans*; Cytometric bead array analysis; ELISA; Cytokines