



## Changes of Th1/Th2 cytokines in immunocompetent patients with pulmonary cryptococcosis

J.L. Wang, S.Y. Li, Y.F. Luo, Y.P. Zhai and X.Q. Wei

State Key Laboratory of Respiratory Disease,  
Guangzhou Institute of Respiratory Disease,  
The First Affiliated Hospital of Guangzhou Medical University,  
Guangzhou Medical University, Respiratory Medicine,  
Guangzhou, Guangdong, China

Corresponding author: S.Y. Li  
E-mail: shiyuelicn@163.com

Genet. Mol. Res. 12 (4): 5733-5742 (2013)

Received May 14, 2013

Accepted September 21, 2013

Published November 18, 2013

DOI <http://dx.doi.org/10.4238/2013.November.18.22>

**ABSTRACT.** The aim of this study was to investigate the changes of Th1/Th2 cytokines in immunocompetent patients with pulmonary cryptococcosis (PC). Twenty immunocompetent patients with PC were identified by histopathological examination and were enrolled in the study along with the age- and gender-matched healthy controls. The serum concentrations of interferon- $\gamma$  (IFN- $\gamma$ ), interleukin-4 (IL-4), and interleukin-12 (IL-12) were measured by enzyme-linked immunosorbent assay (ELISA). Peripheral blood mononuclear cells (PBMCs) in both groups were isolated and incubated with or without recombinant human IL-12 (rhIL-12) for 48 h, and the concentrations of IFN- $\gamma$  and IL-4 in the supernatant were measured by ELISA. Serum IFN- $\gamma$  levels were greatly decreased in the patients compared with control groups ( $P < 0.01$ ), whereas no significant difference was observed in serum IL-4 and IL-12 levels. The concentrations of IFN- $\gamma$  and IL-4 in the supernatant of PBMCs without the stimulation of rhIL-

IL-12 showed no differences between the two groups. Treatment with rhIL-12 stimulated the release of IFN- $\gamma$ , but not IL-4, into the supernatant of PBMCs in both groups, with a lower increase observed in the patients (4.3-fold) compared to that of controls (7.9-fold) ( $P < 0.01$ ). Serum IFN- $\gamma$  levels may be dampened in immunocompetent patients with PC with no significant changes in serum IL-4 and IL-12 levels. The deficiency in the response to IL-12 stimulation of Th1 cells may be one of the underlying mechanisms for the decline in serum IFN- $\gamma$  levels.

**Key words:** Pulmonary cryptococcosis; Interleukin-4; Interferon- $\gamma$ ; Interleukin-12; Peripheral blood mononuclear cells