The Effects of Nitric Oxide Donors, Cytokines, and Lipopolysaccharide on Apoptosis of the Tilapia Head Kidney-derived Macrophages

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(Received: January, 11, 2011. Accepted: March, 14, 2011.)

ABSTRACT The aims of this investigation were to study the effects of nitric oxide donors, cytokines, and lipopolysaccharide (LPS) on the non-specific immune responses of the tilapia (Oreochromis hybrids) head kidney-derived macrophages by using flow cytometry. Our results showed that tilapia head kidney-derived macrophages treated with IFN-γ, TNF-α, and IFN-γ plus LPS for 24 h exhibited a very high percentage of apoptotic cells. At the same time, IFN-γ also induced apoptosis in tilapia head kidney-derived macrophages. However, low doses of nitric oxide donors were able to inhibit apoptosis in the cells. The percentage of apoptosis of the tilapia macrophages decreased with addition of IL-4 and IL-10. On the other hand, tilapia head kidney-derived macrophages treated with high doses of nitric oxide donors for 24 h expressed a very high percentage of apoptosis. Simultaneously, the effect seemed to be dose-dependent. [Cheng CF, Hung SW, Lin YH, Liu PC, Chen MH, Tu CY, Chang CH, Chiou SH, Wang WS. The effects of nitric oxide donors, cytokines, and lipopolysaccharide on apoptosis of the tilapia head kidney-derived macrophages. Taiwan Vet J 37 (3): 169-179, 2011. * Corresponding author TEL: 886-4-22840894-508, FAX: 04-22862073, E-mail: wswang@dragon.nchu.edu.tw]

Key words: apoptosis, cytokine, head kidney-derived macrophages, lipopolysaccharide, nitric oxide