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Cytokine Immune Response Differences in Mexican Creole and Commercial Pigs under Uncontrolled Conditions

[1]K. Mejía, [1]C. Lemus-Flores, [1]J.F. Zambrano, [2]R. Ramírez-Necoechea,
[2]D. Mota-Rojas and [2]M. Alonso-Spilsbury
[1]Universidad Autónoma de Nayarit, México. Cd. de la Cultura Amado Nervo,
Nayarit-63190, México
[2]Dpto. Producción Agrícola y Animal. Universidad Autónoma Metropolitana,
Unidad Xochimilco. Calz. del Hueso 1100. Col. Villa Quietud, México, DF-04960, Mexico

Abstract: The aim of the study was to differentiate cytokine immune response in Mexican creole pigs and compare them to commercial pigs (COM) (F1 Yorkshire x Landrace) as disease resistance indicators. Seventy six animals were divided into three groups and monitored: 26 COM, 25 Cuino pigs (CP) and 25 Mexican hairless pigs (MHP). Pigs were vaccinated with a commercial bacterin 45 days after they were born, a sample was taken seven days after (53 days old) to test cytokine serum levels: Interleukin 1β (IL-1β), interleukin 4 (IL-4), interferon-gamma (INF-γ) and tumor necrosis factor alfa (TNF-α). Cytokine quantification serum tests were carried out with commercial kits which use the ELISA sandwich method. The Kruskal-Wallis test was used to compare cytokine concentrations in the various swine breeds, the Wilcoxon test was used to find differences between breeds. IL-1β and IL-4 production was higher in HMS compared to the other breeds. There were no significant differences between INF-γ and TNF-α production. The results obtained in this study, suggest that MHP have a higher response capacity before an infection, compared to the other breeds.

Key words: Cytokine, humoral immune response, creole pigs

INTRODUCTION

A high percentage of domestic species for human consumption are in danger of extinction. Native breeds commonly have valuable traits such as easy adaptation to difficult conditions, including tolerance to parasites and infections, drought and poor food quality (CVID, 2003; Sierra, 2003). Therefore, there is a need to rescue and take advantage of native genetics found in Mexican hairless pig which could be a specimen worthy of investigation for years to come. Recently in Mexico the study of animal genetic resources have become very important, while at the same time extensive genetic variance has become equally as relevant, but so poorly characterized, even more so when regarding creole or native populations (Mariscal, 1998; Sierra *et al*., 2005).

Mexican creole pigs have been reported by FAO as being in danger of extinction (FAO, 2000), it is a little valued species, it is thought to have been introduced into Mexico at the time of the Spanish conquest and has survived various ecological conditions, including infectious factors and a limited nutritional diet. This pig is a source of great biological diversity and some authors suppose that it has a high resistance to disease (Flores, 1992; Lemus *et al*., 2003). The importance on the immunological system of pigs has increased notably and a reduction of the enormous economical losses in the swine industry cannot be achieved without a better understanding of the immunological system of swine (Saalmüller, 1998).

Development of an effective immune reaction includes lymphoid, inflammatory and hematopoietic cells. A group of proteins are designated together with cytokine that indicates intracellular communication, through complex interaction between cells (Margni, 1996). Cytokines are a group of chemically synthesized polypeptides that respond to different immunological stimulus. They can affect different cellular functions and are involved in the immunity and inflammatory response. These proteins regulate immune initiation, maintenance and determine the type of immune response and resistance mechanism against pathogens (Fresno *et al*., 1997).

Due to the pressure in selection that is used today for highly exploited commercial swine breeds, notable diminished genetic variety has been observed, causing

Corresponding Author: Dr. María Alonso-Spilsbury, Universidad Autónoma Metropolitana,
Unidad Xochimilco. Calz. del Hueso 1100. Col. Villa Quietud, México, D. F. 04960. México