

A Note on Serum Insulin in Mexican Cuino Pigs

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Abstract: In this study a 2×2 factorial arrangement was used to study the effect of sex and age on serum insulin levels in 24 growing Mexican Cuino pigs between 3 and 6 months old. There were no significant differences ($p < 0.05$) neither for sex × age interaction nor for sex in any measured index. Overall, Mexican Cuino pigs had 14.4 and 50.8 kg of live weight ($p < 0.001$) and 9.33 and 19.26 u mL⁻¹ of fasting serum insulin levels ($p < 0.001$) at 3 and 6 months old, respectively. Pearson correlation matrix revealed significant differences ($p < 0.05$) among age, live weight and fasting insulin levels in the examined period of life in growing Mexican Cuino pigs. According to the present evaluation, hiperinsulinemia should be present in Mexican Cuino pigs, as it has been found in either obese conventional genotypes of pigs or genetically manipulated to be small and obese animals. This effect was accentuated as pigs aged up to 6 months life. Sex appeared to have no influence on serum status of Mexican Cuino pig insulin.

Key words: Mexican cuino pigs, insulin, age, body weight, sex

INTRODUCTION

Cuino pigs belong to one of three local Mexican genotypes which have been adapted to the habitat after near 5 centuries of introduction from East Asia (Lemus and Alonso, 2005). This type of animal is characterized for attaining the adult stage when arriving to approximately 50 kg. In this moment, the Mexican Cuino pigs have a height of 53-65 cm on average, since they have a small body with a marked trend to accumulate fat (Lemus *et al.*, 2003, 2005). In this connection, it has been suggested that adiposity in animals such as pigs is related to some extent, to the mechanism of insulin control of metabolism (Elsaesser *et al.*, 2002). In this sense, it has been argued that insulin is a crucial regulator of lipids, through different actions and among them, the stimulation of preadipocyte differentiation to adipocytes, glucose cell transport mechanism, triglyceride synthesis (Walton and Etherton, 1986) and lipolysis inhibition (Dunshea *et al.*, 1992b). On the other hand, it has been claimed that antilipolytic hormones as insulin, have a major effect on subcutaneous than visceral lipid tissue.

In our knowledge, there is not previous information related to the role played by insulin in Mexican Cuino pigs, although insulin status has been examined in other

Mexican genotypes employed for studying carbohydrate metabolism (Phillips *et al.*, 1979, 1982). In this respect, the Mexican Cuino genotype of pigs could be used in metabolic studies concerning obesity, as it has been done with other local, Mexican breed of small size, due to be well suited for using at laboratory scale, among other reasons (Panepinto *et al.*, 1978).

The aim of the present study was the estimation of serum levels of insulin in Mexican Cuino pigs for increasing the knowledge of its physiology status, as attained in natural conditions of animal husbandry.

Area of the study: The study was conducted in the Faculty of Veterinary Medicine and Zootechnics of the Autonomous University of Nayarit, at Tepic, Mexico. The climate was semi-warmth and sub-humid, with rainy summers and average annual temperature of 22°C.

MATERIALS AND METHODS

Animals and diets: A total of growing 24 Mexican pigs of the local, Cuino genotype, from the Faculty herd were used. There were 12 animals of three and another of six months old, castrate male and female in the same proportion. The animals were given *ad libitum* a