

Evaluation of the intake of fresh mulberry in crossbred large white pigs : Morphometric , histological and hematological study

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Introduction Including shrub or tree species in diets of pigs has constituted one of the most important challenges in the last 25 years . Today availability of a high number of forage choices and more zootechnical knowledge indicating how they can be used (Savón Gutiérrez Ojeda and Scull 2005) provide great potential .Particular attention has been paid to mulberry (*Morus alba* Linn .) for its acknowledged bromatological values ,its adaptation to frequent pruning and its productivity . The objective of this paper is to evaluate the intake of mulberry foliage in Large white pigs and its influence on the productive ,reproductive ,offspring health ,morphometric ,histological and hematological indicators .

Materials and methods The mulberry (*Morus alba* Linn .Var .Acorazonada) used was obtained from the production areas of the Experimental Station of Pastures and Forages "Indio Hatuey" .The foliage (leaves and fresh stems) were used for evaluating the performance of the productive indicators of crossbred Large white pigs when mulberry foliage was included in the diet ,8 animals .The diet used consisted of a commercial concentrate based on the feeding norm substituting 26% of Dry Matter of the total intake by fresh mulberry foliage and 27% of the protein .In the Trial evaluating the intake of fresh mulberry foliage (leaves and fresh stems) when fed ad libitum in crossbred Large white sows at different reproductive stages (empty and covered) ,a sample of 10 animals per reproductive category were used .For the study of the hematological indicators ,blood sampling was done every 15 days ,measuring the following indicators : hematocrit ,hemoglobin ,and leucogram with differential .For the morphometric study of the digestive organs (stomach ,small and large intestine) and accessory organs (liver ,heart and lung) ,a tape measure (in centimeters) was used for measuring the length ,width and thickness ,as well as a digital scale for weighing the organs (full and empty) .This experiment used 8 sows (four per each treatment group) after slaughter .The sampling was performed in the cool hours of the day ,and the histological processing was done by means of hematoxylin-eosin dyeing .The microscopic analysis and the description of the histological structure were conducted with an optical microscope attached to a digital camera ,for capturing the image .

Results and discussion In the evaluation developed under the concept of including the mulberry foliage in higher percentages ,it was found that the daily gains increased with the increase of live weight of the pigs ,which indicates that the efficiency of use of mulberry is improved as the animal size increases ,similarly the efficiency of the total diet with values that may be considered adequate (Ly 2005) .During the experimental period no effects were detected in the animal health or the performance which encouraged us to study higher inclusion levels of mulberry in the diets .In the trial in which fresh mulberry was offered ad libitum to Large white sows in different reproductive categories ,no differences were detected between the different reproductive stages .When analyzing the productive ,reproductive and zootechnical (offspring health) indicators of the sows which consumed mulberry ,as compared to the other sows that did not have access to this foliage ,an advantage was observed in incorporating fresh mulberry to the diets .Likewise ,a better performance of the hematological indicators (hemoglobin and hematocrit) was observed in the pigs that consumed fresh mulberry foliage compared to the control group (which did not eat this tree component) .In the morphometric indicators studied in the digestive and accessory organs ,a higher organic development of the experimental group was obtained with regards to the control ,as evidenced in the increase of size (length ,width and thickness) in relation with the weight ,which increased proportionally .The histological study showed higher integrity and development of the digestive system and accessory organs ,of the experimental group as compared to the control .

Conclusion These studies confirm the feasibility of using mulberry foliage as partial substitute of the commercial concentrates without causing effects to either the animal health or the pig productive capacity ,with a better performance of the morphometric ,histological and hematological attributes .

Reference

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