Olive Cake in Pigs Feeding: Effects on Growth Performance, Carcass Quality and Gas Emission from Slurry

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INTRODUCTION

The use of agro-industrial by-products in animal feed can be economically and environmentally beneficial to the livestock sector, increasing its profitability and sustainability[1]. In the light of the scarcity of resources and the increasing demand for meat products worldwide, there is a need to search for alternative raw materials different from cereals and soybean meal in animal feed. Olive cake (OC) is one of the most important agro-industrial by-product in the Mediterranean area. With variable oil content, its digestible energy can be acceptable in growing pigs and its use is expected to be beneficial in terms of carcass and meat quality. However, its fiber content is high and this might alter nutrient digestibility, slurry composition and gas emission[2]. In this context, an experiment was conducted to determine the effects of including a partially defatted olive cake (PDOC, about 10% ether extract) in diets, focusing on its effects on growth performance, carcass quality and gas emission from the slurry.

MATERIALS AND METHODS

Two finishing diets were formulated to be isoenergetic, isoproteic and isoaminoacidic, a control (C) diet and a diet with PDOC included at a 12%, replacing barley and adding animal fat. A total of 80 Du x (LDxLW) of 60.4 ± 7.00 kg body weight (BW) were divided in these two treatments (8 pens per treatment; 5 animals/pen). During the finishing period (60 to 110 kg BW, 92 days) animals and feed refusals were weighed fortnightly. Average daily gain, average daily feed intake and feed conversion ratio during this period was then calculated. At the end of the study, backfat thickness (BF) and loin depth (LD) were measured from each animal at the level of the last rib, at 5–10cm of the mid-line and animals were slaughtered to obtain some carcass quality parameters. Also, at the end of the study, 2 buckets (100 L each) were filled per slurry pit from 2 slurry pits per treatment. Gas (ammonia, methane, carbon dioxide and nitric oxide) were measured at each bucket by using the methodology described by Calvet at al. (2017)[3] during two months, approximately.

RESULTS AND DISCUSSION

No significant differences between treatments in performance and carcass quality with the exception of LD that was lower in the group of animals fed PDOC compared with C animals (47.5 vs 45.5, SEM: 0.62; Pvalue: 0.020). Regarding gas emission, slurries from both treatments emitted similar amounts of ammonia, carbon dioxide and nitric oxide. However, the amount of methane emitted by the slurry of animals fed the C diet was slightly higher (0.094 mg/L and h) than that of the animals fed the diet with OC. The lack of differences in growth performance suggested that a 12% of PDOC can be included in diets without negative effects on performance and gas emission per L of slurry. Other studies[4] suggested similar optimum levels of PDOC inclusion (10%).

CONCLUSIONS

The PDCO can be used at levels of 15% in finishing pig diets, not affecting growth performance. At this level, the effects on carcass quality are low but PDCO might reduce methane emission /L of slurry. This knowledge is essential to implement the use of OC in animal feeding and to find more sustainable feeding strategies in the livestock sector.

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