

EFFECT OF A PROTEIN REDUCED DIET WITH AND WITHOUT HIGH CONTENTS OF INDUSTRIAL BY-PRODUCTS, ON ZOOTECHNICAL PERFORMANCE AND SLAUGHTER PARAMETERS OF FATTENING PIGS

Karl Schedle¹, Aude Simongiovanni², Etienne Corrent², Jörg Bartelt³

¹*Department of Agrobiotechnology; Institute of Animal Nutrition, Livestock Products and Nutrition Physiology; University of Natural Resources and Life Sciences, Vienna. 1190 Vienna, Austria*

²*Ajinomoto Eurolysine S.A.S., 75817 Paris, France*

³*Lohmann Animal Nutrition GmbH, 27472 Cuxhaven, Germany*

Abstract. For a calculation of diets covering the pig's requirement and to avoid the waste of valuable nutrients without impact on zootechnical performance, the knowledge about the nutrient contents and their availability of the used feedstuffs, is a prerequisite. From the perspective of sustainability, higher usage of industrial by-products would be desirable to reduce the strong competition for food between human and pig nutrition. Hence, the aim of the present study was to test the effect of high amounts of wheat middlings in pig diets under consideration of the net energy system on zootechnical and slaughter performance of fattening pigs.

Four dietary treatments differing in energy- (corn / barley / wheat middlings) and protein source (soybean meal / rapeseed meal / DDGS) were conducted, resulting in one high dietary crude protein treatment (soybean meal) and three reduced dietary crude protein treatments (rapeseed meal, low wheat middlings and high wheat middlings). Animals receiving the high wheat middlings diet showed a significantly lower daily feed intake (-13.6%) compared to the diet including rapeseed meal ($p < 0.0001$). The rapeseed meal diet declined the feed to gain ratio (+8.6%) compared to the other treatments ($p < 0.05$). The average daily gain was numerically greater for pigs receiving the high protein diet (+6.4%; $p < 0.1$) compared to the other treatments. No differences between treatments were recorded for the investigated slaughter parameters. Specific slaughter parameters showed the highest Pearson correlation coefficient with the daily net energy intake.

The observed differences regarding zootechnical performance parameters can be explained by unbalanced nutrient contents between the different experimental diets. The net energy system appears to be the most precise tool for an energy estimation of fattening pig diets. An accurate knowledge of the nutrient contents and availability of the feedstuffs is a prerequisite to optimize balanced diets for fattening pigs.

Keywords: fattening pigs, protein reduced diets, performance, industrial by-products, net energy