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Effect of increasing level of brewers grains in diets of rabbits on carcass quality and economic efficiency

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Take home message Produce acceptable rabbits carcasses with brewers grains, a neglected agro-industrial by-product.

Introduction Brewers grains is an agro-industrial by-product of beer production. According to the Feedipedia database (Heuzé *et al*., 2017), it can be considered as a good source of protein (24%) and fibre (NDF: 62.4%, ADF: 19.7%). In Algeria this product is inexpensive and locally available (8.37 €/quintal) compared to soybean meal (46 €/quintal). The aim of this trial was to study the possibility to produce acceptable rabbits carcasses with a feed containing high rate of brewers grains and measure its effect on economic efficiency and competition with humain food.

Materials & methods At weaning (35 d. of age), 180 rabbits were divided into three identical groups (body weight = 860 ± 126g) and housed in collectives cages (4 rabbits per cage) until slaughter (77 days). Each of the three groups was fed *ad libitum* either pelleted feed containing 0% (control or B0), 20% (B20) or 30% (B30) of dried brewers grains in partial replacement of soybean meal and to decrease alfalfa and barley rates. The average protein and ADF levels were 14.4 and 15% respectively. After six weeks of fattening, ten rabbits per group were slaughtered (without fasting) in controlled conditions. The weight of full digestive tract, skin and hot carcass was recorded immediately after slaughter. On chilled carcasses, data were recorded: the weight of cold carcass, liver, perirenal fat, inguinal fat and scapular fat. Data were subjected to analysis of variance with R software in order to evaluate the effects of the diet on slaughter parameters.

Results & discussion Growth performance (30g/days) and feed intake (98g/days) were not affected by treatments, but feed conversion was higher in B20 group (3.65 *vs* 3.92) because of its low energy concentration (DE). The incorporation of brewers grains did not impair the slaughter traits (Table 1). Dressing out percentage was the same in all groups (59.4± 0.5% on average for the cold carcass, p>0.05). Economic efficiency (Table 2) was 15% and 41% better in B20 and B30 diets respectively with almost 0,10 and 0,23 Euro (€) more benefit per kg of meat. For the competition of feeds with human food, the values obtained for two indicators SAPAA and PAACoH (Pothin *et al*., 2016) showed that the diets used in this essay have a low competition on space and resources.

Table 1 Slaughter performance of rabbits in the experimental groups.

	B0	B20	B30	SEM	P
Body weight (BW), g (78days)	2164	2151	2166	38	0.952
Weight of full digestive tract, g	388	428	420	14.48	0.148
Cold carcass weight, g	1294	1265	1289	24	0.665
Liver weight, g	83	77	92	4.44	0.562
Perirenal fat, g	19	20	23	1.65	0.658
Dressing out percentage of cold carcass, %	60.9	59.76	60.1	0.49	0.843

Table 2 Economic performance of rabbit units according to the diet fed to the rabbits.

Parameters	B0	B20	B30
Total weight gain (kg)	1.20	1.16	1.25
Total feed intake/rabbit (kg)	3.52	3.92	3,78
Feed price (€/kg)	0.28	0.23	0.20
Feed cost €/kg	1.01	0.91	0.77
Economic efficiency (%)	283	324	399
Revenue €/kg meat produced	2.84	2.94	3.08

Conclusion These results show that the incorporation of brewers grains at increasing rates does not impair the slaughter performance of rabbits and allows production of carcasses at the same level to those permitted by the control diet, improves the economic efficiency and makes feeds uncompetitive with human food.

References

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Pothin A, Méda B and Fortun- Lamonth L 2017. 12ème journées de la recherche Avicole et des Palmipèdes à Foie gras.