GCIRCBUL6*23

Effect of Crude Fibre and Glucosinolate Contents on the Metabolizable Energy Value of Rapeseed Meals for Adult and Young Birds

M. LESSIRE (1), L. CONAN (2) and J.J. BAUDET (3)

(1) INRA, 37380 Nouzilly - (2) INRA, 17700 Surgères - (3) CETIOM, 75116 Paris (France)

INTRODUCTION

Metabolizable energy (ME) value of rapeseed meal is lower than that of soyabean meal. This difference is due to its higher crude fibre content : SETH and CLANDININ (1973), BAYLEY and HILL (1975), LESSIRE (1985), LESSIRE and BAUDET (1986). Consequently, its incorporation in high energy poultry food is limited. Moreover, it also contains antinutritionnal substances wich reduce its ME value (HUYGHEBAERT et al., 1983). This reduction is more important in varieties with high glucosinolate contents. The purpose of the present experiment is to measure the ME value of low and very low glucosinolate rapeseed meals in young and adult birds. The effect of dehulling the seed before processing is also analysed.

MATERIAL AND METHODS

Four rapeseed meals (table 1) were made with respectively whole seeds and mechanically dehulled ones. Seeds were abtained from two French cultivars with low (DARMOR) or very low (TAPIDOR) glucosinolate contents. The ME is determined by difference using 0 and 30 % incorporation levels into a basal diet. Twelve adult cockerels or 21-day-old broilers fed ad libitum are used for each diet.

RESULTS

In adult and young birds, TAPIDOR ME content is less than that of DARMOR : 1672 and 1553 vs 1771 and 1664 kcal/kg respectively ; but TAPIDOR has higher ash contents. In dehulled meals, crude fibre is decreased from 144 and 114 g/kg to 63 and 66g/kg for DARMOR and TAPIDOR respectively. Consequently glucosinolate and protein contents are increased from 41.8 and 11.6 µMoles/g and from 364 and 372 g/kg to 51.6 and 24.9 µMoles/g and to 436 and 443 g/kg. Irrespective of the seed variety, dehulling results in increased ME values : 2120 and 2200 kcal/kg or 2085 and 1884 kcal/kg for adult or young birds.

DISCUSSION - CONCLUSION

Differences in ME values in high and low glucosinolate rapeseed meals have been previously found (LODHI et al., 1970, HUYGHEBAERT et al., 1983, LESSIRE, 1985, LESSIRE and BAUDET, 1986). Moreover, these differences are more pronounced in broilers than in cokerels. In this experiment,

glucosinolates have no effect on ME, but the meals used contain lower levels of glucosinolates than in the previous studies. Consequently, the difference between adult and young birds is independant of the meal used, except for TAPIDOR dehulled meal. For both varieties, dehulling the seed before processing results in increased ME values of the meals as mentionned by LESSIRE (1985), LESSIRE and BAUDET (1986). This effect is similar for young and adult birds. The main conclusion of this experiment is that the supplementary reduction in glucosinolate contents in rapeseed doesn't result in supplementary increase in ME value for poultry. The only advantage would be the reduction in rapeseed meal toxicity.

REFERENCES

BAYLEY H.S. and HILL D.G. (1975). Can. J. Anim. Sci., 55 : 223-232.

HUYGHEBAERT G., FONTAINE G; and DE GROOTE G. (1983). Arch. Geflügelk., 47 : 50-60.

LESSIRE M. (1985). In l'Enjeu, Paris (France) : 37-53 (ONIDOL Ed.).

LESSIRE M. and BAUDET J.J. (1986). 7th European Poultry Conference, Paris (France) : 254-257 (WPSA Ed.).

LODHI G.N., CLANDININ D.R. and RENNER R. (1970). Poult. Sci., 49 : 289-294.

SETH P.C.C. and CLANDININ D.R. (1973). Poult. Sci. 52 : 1158-1160.

TABLE 1 : **Composition and metabolizable energy values of the rapeseed meals (DM basis)**

	WHOLE SEEDS MEALS		DEHULLED SEEDS MEALS	
	DARMOR	TAPIDOR	DARMOR	TAPIDOR
GLUCOSINOLATES µMole/g	41.8	11.6	51.6	24.9
CRUDE FIBRE g/kg	144	114	63.0	66.0
CRUDE PROTEIN g/kg	364	372	436	443
ETHER EXTRACT g/kg	8.0	10.6	9.3	7.2
ASH g/kg	75.0	119.9	78.9	111.2
GROSS ENERGY Kcal/kg	4609	4392	4618	4499
METABOLIZABLE ENERGY Kcal/kg				
- adult bird	1771	1672	2120	2200
- young bird (N cor.)	1664	1553	2085	1824