COMPARISON OF DOUBLE-LOW RAPESEED MEAL AND SOYBEAN MEAL IN FEEDING EXPERIMENTS ON FINISHING PIGS

H.-D. BOCK[1], S. BURACZEWSKI[2], W. KRACHT[1], J. KRAMP[3] and R. SCHADEREIT[1]

1) Academy of Agricultural Sciences of the GDR, Research Centre of Animal Production Dummerstorf-Rostock, Department of Animal Nutrition "Oskar Kellner"

2) Institute of Animal Physiology and Animal Nutrition Jablonna/Warsaw of the Polish Academy of Sciences

3) Cereal Production Wolgast (Nationally owned firm)

Since 1968 two research groups from the GDR and three groups from Poland have studied various procedures to improve the feed value of rapeseed meal (RSM). In the course of the continuing studies on commercial RSM with high contents of glucosinolates these groups succeeded in reducing evidently the glucosinolates using different treatments (BOCK et al., 1979; 1981; KOZLOWSKI et al., 1981; MIETH et al., 1983).
However, the selection of new winter rapeseed varieties with double low quality by breeders of our two countries changed the topic of our following common studies.
Analytical data concerning the chemical composition of the RSM of these new varieties and experiments on rats and broilers fed with those RSM samples showed the high nutritive values of these cultivars (BOCK et al., 1981; 1986).
In this paper a comparison is presented between soyabean meal and Canola resp. the Polish double-low variety "Jantar" concerning their chemical composition and experiments on fattening

pigs under practical conditions organised in the GDR. Analogously performed investigations have been arranged parallely by our colleagues in Poland.

Materials and Methods

The three samples - soyabean meal, Canola and the RSM "Jantar" - were applied to the analyses of the nutrients (protein, fat, fibre, lysine) and the glucosinolates (except soyabean meal) using a modification of the method of YOUNGS and WETTER (1967). The fattening experiments were performed on growing pigs (35 - 120 kg live weight) under farm conditions in three cooperatives of different levels. The parameters - feed intake, daily gains, feed conversion and weight of the thyroid glands - have been determined.

Results and Discussion

The values of the chemical composition of the three components under test are shown in table 1.

Table 1
Chemical composition of soyabean meal (SBM), Canola and the Polish rapeseed meal (RSM) "Jantar" (Percentage of dry matter)

	Crude Protein	Crude Fat	Crude Fibre	Lysine[1)]	ITC[2)]	VOT[2)]
SBM	50,1	1,4	7,8	6,6		
Canola	39,3	3,2	15,9	6,1	0,10	0,16
RSM "Jantar"	40,3	3,7	16,7	5,8	0,09	0,20

1) Percentage of the protein content

2) Mean values

The differences between the data of Canola and RSM "Jantar" are insignificant. The values of the glucosinolate determinations using the HPLC method (table 2) establish the low glucosinolate contents of Canola in comparison to the commercial RSM. The values of RSM "Jantar" correspond to those of Canola (see table 1).

Table 2
Composition of the glucosinolates in Canola compared with a commercial rapeseed meal (RSM) using HPLC method[1)]
(μ mole/g meal)

	Canola	Comm. RSM
Glucosinolates	18,7	90,3
Glucoraphanin	2,79	3,71
Progoitrin	7,15	55,85
Napoleiferin	1,80	3,16
Gluconapin	3,06	19,65
Glucobrassicanapin	0,93	3,76
Sinalbin	1,85	0
Glucobrassicin	0,10	0,62
4-Hydroxy-glucobrassicin	1,12	3,25

1) The authors are very grateful to Dr. H. Sørensen (Chemistry Department of the Royal Veterinary and Agricultural University Copenhagen/Denmark) for his analytical data.

The high amounts of the two RSM (16 % of the ration) have been especially chosen for comparing their feed efficiency more pronounced.
The protein and energy contents of the three rations were balanced (table 3).

Table 3
Composition of the rations for fattening pigs (Percentage)

Group	1	2	3
Soyabean meal	14	2	2
Canola	–	16	–
RSM "Jantar"	–	–	16
Wheat	73,8	79,8	79,8
Barley	10	–	–
Minerals	1,7	1,7	1,7
Vitamins	0,5	0,5	0,5
EFs	643	642	644
Digestible protein	142	152	140

Considering the higher deviations between the farm conditions only the parameters feed intake and live weight gain are showing slightly better values of the soyabean meal sample compared with those of the two RSM samples (table 4).

Table 4

Results of the 3 fattening experiments on pigs at the cooperatives A, B and C (Mean values)

Group	1			2			3		
	A	B	C	A	B	C	A	B	C
n	70	13	12	70	13	12	70	13	12
Feed intake kg/day	2,92	2,55	2,47	2,43	2,32	2,38	2,56	2,77	2,31
Live weight gain g/day	775	654	677	668	662	628	705	707	607
Feed conversion kg/kg live weight gain	3,77	3,90	3,65	3,64	3,50	3,79	3,63	3,92	3,81
Thyroid gland weight mg/kg live weight	166	x	x	299	x	x	322	x	x

x Not estimated

Between the latters significant differences in the checked parameters cannot be stated.

In feed conversion and carcass quality no differences between the three feedstuffs can be established too.

RSM "Jantar" and Canola are showing the same feed value. However, the ratio between these two feedstuffs and soyabean meal corresponds about 1 : 1.2 related to feed efficiency.

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