

NUTRITIONAL EFFECTS OF VARIOUS RAPESEED CONSTITUENTS IN MALE WISTAR RATS

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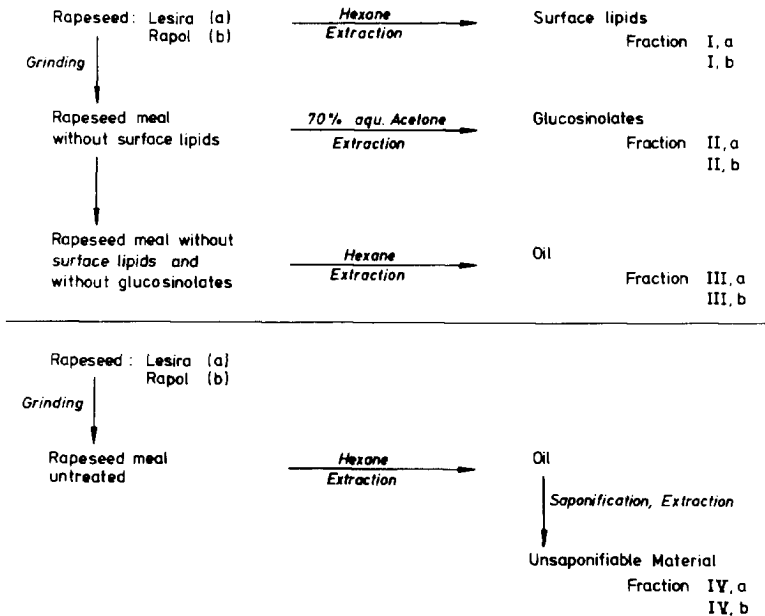
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In an attempt to localize anti-nutritional factors in the seeds of rape, the seeds of two varieties, *Brassica napus*, Lesira (a) and *Brassica napus*, Rapol (b), were fractionated "topographically", as shown in Scheme 1, and the various fractions, dissolved in soybean oil, were fed to rats.

SCHEME 1

FRACTIONATION OF RAPESEED CONSTITUENTS



Batches of 30 kg of seed yielded 20 to 25 g of surface lipids (Fraction I), 10 kg of seeds free of (I) gave ca 500 g of glucosinolates (Fraction II) and 10 kg of seeds free of (I) and (II) afforded 2000 g of oil (III). Samples of 10 kg of untreated seeds yielded 20 to 25 g of unsaponifiable material (Fraction IV).

The various fractions isolated were dissolved in soybean oil and fed to male Wistar rats at a level of 30 cal % fat as part of a semisynthetic diet (1). The experimental conditions are summarized in Table 1.

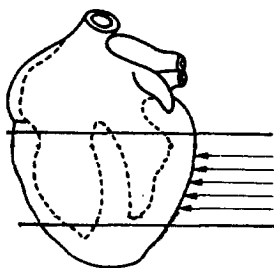
The animals were examined at autopsy: hearts, livers and kidneys were removed and weighed. Five transversal sections of each heart were sampled as shown in Fig. 1, and submitted to a detailed histomorphometric inves-

TABLE 1  
NUTRITIONAL EXPERIMENT

Lipid supplement	Enrichment	Number of animals	Days on diet
Soybean oil plus			
Fraction I, a	fivefold	15	120
Fraction I, b	fivefold	15	120
Soybean oil plus			
Fraction II, a		25	110
Fraction II, b		25	110
Soybean oil plus			
Rapeseed oil III, a (4:1)		50	180
Rapeseed oil III, b (4:1)		50	180
Soybean oil plus			
Fraction IV, a	fivefold	12	32
Fraction IV, b	fivefold	12	32
Soybean oil			
Control group		50	180

FIG. 1

SAMPLING SITES FOR HISTOMETRIC DETERMINATION OF MYOCARDIAL CHANGES IN THE RAT



tigation (1).

The livers and kidneys were analyzed for their total lipid contents and fatty acid compositions.

The results of the histomorphometric studies, as shown in Table 2, indicate that, with the exception of erucic acid, the seeds investigated did not contain any constituents which exhibit marked antinutritional effects.

TABLE 2

INFLUENCE OF VARIOUS FRACTIONS ON CARDIAC CHANGES IN THE RAT HEART

Groups	Lesira	Rapol	Soya	P
<u>Surface lipids (Fraction I)</u>				
Affected/Examined	10/12	8/12	6/10	0.46
Mean rank:				
Number of lesions	19.8	16.0	16.7	0.59
Sum of Feret	21.8	16.3	13.8	0.14
Number of lesions per animal	1.5	1.1	1.3	
Average sum of Feret	20.8	9.2	6.0	
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<u>Glucosinolates (Fraction II)</u>				
Affected/Examined	10/20	17/20	6/10	0.0085
Mean rank:				
Number of lesions	21.7	29.9	24.4	0.17
Sum of Feret	22.5	30.0	22.4	0.19
Number of lesions per animal	1.1	2.2	1.3	
Average sum of Feret	11.1	18.2	6.0	
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<u>Oil (Fraction III)</u>				
Affected/Examined	11/17	12/18	11/18	0.94
Mean rank:				
Number of lesions	27.1	29.2	24.7	0.81
Sum of Feret	26.0	30.1	24.8	0.43
Number of lesions per animal	2.1	1.8	1.2	
Average sum of Feret	18.4	15.5	9.5	
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<u>Unsaponifiable material (Fraction IV)</u>				
Affected/Examined	5/10	6/10	5/10	0.87
Mean rank:				
Number of lesions	16.2	15.9	14.4	0.87
Sum of Feret	15.8	15.9	14.8	0.95
Number of lesions per animal	1.2	0.8	0.6	
Average sum of Feret	9.4	5.4	5.5	

REFERENCE

1. Vles, R.O., G.M. Bijster, J.S.W. Kleinekoort, W.G. Timmer and J. Zaalberg, 1976. *Fette · Seifen · Anstrichmittel* 78, 128.