

Cartas científicas

Effects of soybean or canola oil intake on seminiferous tubules structure in young rats

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The prevalence of infertility is increasing in many countries. Some evidences consider that diet content may influence fertility.¹ Among diet factors, the quantity and the kind of fat intake can contribute to spermatogenesis. The essential fatty acids, such as linoleic acid (LA) and alpha linolenic acid (ALA) are present in Sertoli and germ cells. Thus, the diet-lipid relation of LA and ALA can result in impaired fertility.² The aim of study was to compare the effects of feeding young rats with diets containing high or low LA/ALA ratio, provided by soybean or canola oil, respectively, on seminiferous tubules structure.

After weaning, male Wistar rats were randomized to receive either a diet containing 7 ml/100 g of soybean (S7% control group, n = 10) or canola oil (C7% experimental group, n = 10). The diets have same amounts of the casein (20 g), cornstarch (53 g), sucrose (10 g), fiber (5 g), mineral (3.5 g) and vitamin mix (1 g), L-cystine (0.3 g) and choline bitartrate (0.25 g), per 100 g diet. In agreement with American Institute of Nutrition recommendations.³ After 39 days of treatment, at 60-days-old, body mass and length were evaluated. Animals were sacrificed, the testis were dissected and weighed. For stereological evaluation, the testis were fixed in alcoholic Bouin solution and processed following the routine techniques for paraffin inclusion. Serial sections of 5 µm thick were stained with hematoxylin-eosin. The data were analyzed by Student's t test. Results are expressed as means ± SEM with significance level of P < 0.05.

The animals had similar body mass, length and daily food intake. Testis mass was 14% lower (P < 0.05) in C7% group than S7% group. Length density (L_v) and

	S7%(n10)	C7%(n10)
Body mass, g	260.3 ± 3.9	251.6 ± 4.9
Body length, cm	40.67 ± 0.2	41.10 ± 0.1
Daily food intake, g	52.3 ± 3.9	55.4 ± 3.1
Testis, g	1.42 ± 0.05	1.22 ± 0.04*
Volume density (V _v), %	54.8 ± 1.4	48.2 ± 1.7*
Length density (L _v), mm/mm ²	38.6 ± 1.2	35.8 ± 1.0
Transverse area (A), µm ²	14,240 ± 169	13,510 ± 156*
Surface density (S _v), mm ² /mm ³	17.9 ± 0.3	17.0 ± 0.8

Post-weaning groups fed with control diet, containing 7 ml of soybean oil (S7%, n = 10) or experimental diet, containing 7 ml of canola oil (C7%, n = 10), until 60 days old.

*Significantly different from the control group (Student's t test, P < 0.05).

Surface density (S_v) did not differ. The C7% group showed significantly low Volume density (V_v, -12%) and Transverse area (A, -5%).

Changes in dietary polyunsaturated fatty acids are reflected in the composition of tissues, including testis cells. Okuyana et al.⁴ reported lower serum concentration of testosterone, in rats treated, during 84 days, with diet containing 12% canola oil. While Rotkiewicz et al.⁵ verified that rapeseed oil, rich in ALA, caused degeneration and necrosis of seminiferous tubules in rats treated during 24 months.

To our knowledge, this is the first experimental study that evaluates the effects of diet containing canola oil on the morphology of seminiferous tubules of young rats. The model suggests that LA/ALA ratio might modify the testicular physiology and it would be appropriate avoid an excessive dietary intake of ALA, with respect to LA.

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