rats were given water by stomach tube once every 4 hours during the early stages of their incubator life, in order to prevent excessive dehydration. After day 15 this treatment was unnecessary. The average weaning weight of the experimental group was 37 g as compared with the littermate control group with 54 g. The 2 average creatine values are practically identical, being 221 mg and 218 mg respectively. It would appear from this study that semi-starvation for the last 16 days of lactation does not create a loss in muscle creatine. Therefore the drop in creatine value in the E-low paralyzed group was not occasioned or influenced by a semi-starvation which might conceivably have occurred.

Summary. A marked loss in skeletal muscle creatine occurs during the paralysis of suckling rats from mothers held on an E-low diet. These muscles showed extensive degeneration. There was a subsequent rise to normal creatine values with spontaneous recovery from the paralysis. Such muscles showed histological normality. The lowered muscle creatine was not produced by inanition.

10658

Failure to Produce Abdominal Neoplasms in Rats Receiving Wheat Germ Oil Extracted in Various Ways.*

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Rowntree and coworkers[1-4] reported the production of abdominal neoplasms in rats of the Wistar, Buffalo and Yale albino strains held for varying periods and on different intake of a crude ether extracted

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1 Rowntree, L. G., Lansbury, J., and Steinberg, A., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 424.

2 Dorrance, G. M., and Ciccone, E. F., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 427.

3 Rowntree, L. G., Steinberg, A., Dorrance, G. M., and Ciccone, E. F., *Am. J. Cancer*, 1937, **31**, 359.

4 Rowntree, L. G., Steinberg, A., and Brown, W. R., *Trans. Assn. Am. Phys.*, 1938, **53**, 199.

wheat germ oil. In the Wistar strain tumors were palpable as early as 15 days (and in all animals by 111 days) following the administration of 4 cc of wheat germ oil. Carruthers[5] in Mattill's laboratory, employing albino rats of the Wistar and Sprague Dawley strains, was unable to confirm Rowntree's findings. Day, Becker and McCollum[6] were unable to show that ether *per se* played a part as they failed to produce neoplasms in the McCollum strain when they fed a pressed wheat germ oil that had been refluxed with peroxide-free ether and a faint trace of ether remained in the wheat germ oil.

In connection with other studies carried out in this laboratory, rats of the Long-Evans strain have been maintained for long periods on various intakes of a crude wheat germ oil prepared by extracting the fresh germs with a high grade petroleum ether. It was impossible to free the oil of residual traces of solvent. This oil was at first clear but a sediment (probably sterols) separated on standing. A wheat germ oil so prepared was active as vitamin E in a single dose of 0.5 g when administered to vitamin E-low females of proved sterility. The experiments, in which the pressed and ether-extracted wheat germ oils were fed, were planned to test the Rowntree findings.

The ether extracted wheat germ oil was prepared exactly according to the method used by E. R. Squibb and Sons, who furnished the oil used by Rowntree. The cold pressed wheat germ oil was assayed for vitamin E activity and found potent in a single dose of 500 mg and the concentrate at 100 mg.

The wheat-germ-oil-containing diets employed were as follows:

	791	789	798	809
Casein (commercial)	27	27	34	27
Cornstarch (cooked)	35	35	—	27
Salts (McCollum 185)	4	4	4	4
Lard	12	—	—	—
Wheat germ oil†	10	22	50	30
Cod liver oil	2	2	2	2
Brewers' yeast	10	10	10	10

All diets were made in sufficient quantity for one week's feedings and stored at 0°C. They were fed daily in porcelain containers. The 100 mg of the concentrate from wheat germ oil was fed by dropper daily. The animals in this group were maintained on our standard E-low diet No. 427[7] as were those receiving the supplement of 2 cc of wheat germ oil.

[5] Carruthers, C., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 107.

[6] Day, H. G., Becker, J. E., and McCollum, E. V., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 21.

† Wheat germ oil extracted with high grade petroleum ether, Diets 791 and 789; wheat germ oil extracted with ether, Diet 809; wheat germ oil pressed, Diet, 798.

[7] Emerson, G. A., and Evans, H. M., *J. Nutr.*, 1937, **14**, 169.

TABLE I.
Wheat Germ Oil Experiments. Autopsy Findings Normal.

No. of rats	Sex	Wheat germ oil: Type	Quantity fed 6 times weekly	As % of diet ad lib.	Days fed
20	F	petroleum ether extracted	2 cc		45
13	F	" " "		22 (Diet 789)	45
14	F	" " "		10 (" 791)	365
14	F	" " "	4 drops		365
5	M	" " "	4 "		277
12	F	pressed		50 (" 798)	180
6	M	"		50 (" 798)	180
6	F	vitamin E concentrate	100 mg		180
3	M	" " "	100 mg		180
6	F	ether extracted		30 (" 809)	370
2	M	ether extracted		30 (" 809)	370

The animals in all groups were autopsied at the end of the periods indicated (45-370 days) and a careful examination of all organs was made. In no case was a neoplasm found (Table I) even in the case of rats maintained on the 30% ether extracted wheat germ oil for a period of 370 days. It must be pointed out that our rats are not of the albino strain and may be sturdier than those employed by Rowntree.

Conclusion. Rats of the Long-Evans strain did not develop abdominal neoplasms when maintained for periods from 45-370 days on high wheat-germ-oil-containing rations. One hundred and one animals were employed in these experiments.

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Blood-CNS Barrier Permeability to Horse Serum In Experimental Poliomyelitis.*

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It is generally accepted that the passage of foreign substances between the blood and spinal fluid is controlled by a physiologic barrier interposed between the central nervous system and other,

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