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## Wheat Germ Oil and Tumor Formation.

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Rowntree,<sup>1,2</sup> and Dorrance and Ciccone<sup>3</sup> have reported the occurrence of tumors in rats fed wheat germ oil as an adjunct to their regular diet. It was spread on their daily rations in 1 to 4 cc amounts, or administered directly by mouth from pipette. As early as the 60th day of the experiment tumors (sarcomas) were observed in the abdominal cavities of the animals. They were transplanted successfully through as many as 15 successive recipients. It was determined that only ether-extracted oil was potent, and that the flocculent precipitate in the oil, rather than the oil itself was the effective principle.

Rowntree's methods of extracting the oil were considered too hazardous for us to pursue in a hospital caring for scores of patients. Following the suggestion of Dr. Fred R. Weedon (Dept. of Laboratories, Yonkers, N. Y.) we extracted our oil by ether direct, filtered it, and then cleared it of its ether by evaporation, first in an open room and finally in an incubator. Over half the extract was composed of a cloudy precipitate—called "foots" by the oil chemist.

In our first experiment 12 three-month-old rats of Wistar stock were given 1 cc doses of this "foots"-laden oil daily, directly by mouth from a pipette. Twelve control animals were fed "Zygon"—Squibb, an expressed wheat germ oil. Still continued 12 months after its inception this experiment is entirely negative for tumor production in our animals. In our colony of over 500 stock rats, living during this period, only one developed a sarcoma occurring in the abdominal cavity.

In the second experiment 7 rats, 4 to 7 months old, were given intraperitoneal injections of the oil in 1 cc doses, every 10 days, until each had received 10 such injections. Twelve months have elapsed since the beginning of this experiment. These animals are likewise free from tumors of any sort.

In the third experiment 4 rats, 5 months of age, were fed a very

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<sup>1</sup> Rowntree, L. G., Lansbury, J., and Steinberg, Arthur, *PROC. SOC. EXP. BIOL. AND MED.*, 1937, **36**, 424.

<sup>2</sup> Rowntree, L. G., *Am. J. Ca.*, 1937, **31**, 359.

<sup>3</sup> Dorrance, G. M., and Ciccone, E. F., *PROC. SOC. EXP. BIOL. AND MED.*, 1937, **36**, 426.

highly concentrated wheat germ oil precipitate, extracted and generously donated by Mr. Reginald Auchincloss, of New York City. It was obtained from the ether-extracted oil by first mixing it with a 10% solution of NaOH in methanol, refluxing it 1½ hours, and then saponifying it. This was then mixed with an equal amount of water, extracted with ether 3 times, and washed in water 3 times. The extract was then dried over Na<sub>2</sub>SO<sub>4</sub> over night and the ether finally distilled off leaving the unsaponifiable extract containing sterols and vitamin E. This product was so heavy it had to be liquefied by warming in giving it to the rats. Being about a 10-fold concentration of the supposed active principle only 2-minum doses were given the animals on alternate days. One of the rats died after it received 24 feedings, while the remaining 3, after having received 94 feedings, are still alive 4 months later. No tumors are discernible by palpation in these animals.

Although additional experiments are being continued and widened, the present series, now being concluded, admits of this report on our failure to produce tumors in rats through the administration of wheat germ oil.

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**Experimental Hypertension. Effects of Kieselguhr Injection and of Splanchnic Stimulation.\***

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Several observers have determined the effects on the blood pressure of injecting multiple emboli into the renal arteries. Senator<sup>1</sup> injected liquid paraffin into the renal arteries of cats and no elevation of blood pressure occurred. Cash<sup>2</sup> injected insoluble Berlin blue into the renal arteries of dogs. The blood pressure did not become elevated. Similarly, no rise in the blood pressure of dogs was detected by Apfelbach and Jensen<sup>3</sup> following the injection of particles of charcoal. On the other hand, Maegraith and McLean<sup>4</sup> reported

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<sup>1</sup> Senator, H., *Z. f. klin. med.*, 1911, **72**, 189.

<sup>2</sup> Cash, J. R., *Bull. Johns Hopkins Hosp.*, 1924, **35**, 168.

<sup>3</sup> Apfelbach, C. W., and Jensen, C. R., *J. Clin. Invest.*, 1931, **10**, 162.

<sup>4</sup> Maegraith, B. G., and McLean, F. J., *J. Physiol.*, 1938, **92**, 44.