after administration of the serum. There was no agglutination present before administration of serum, but at the 4-hour period and the subsequent ones marked agglutination was demonstrable. In Case 6 (illustrated) reaction to the Francis test was negative 4 hours after administration of serum but 6 hours later it was strongly positive. These determinations would indicate that within a comparatively short time a sufficient amount of antipneumococcal antibody is absorbed from the muscle to account for the results obtained.

The Francis test or agglutinin-titration is now performed on all children who receive rabbit antipneumococcal serum and the agglutinin-titer is determined on all children who receive horse antipneumococcal serum.

We realize that this preliminary series is too small to draw final conclusions. However, the response to the intramuscular administration of antipneumococcal serum in 24 seriously ill children was decidedly favorable in all instances, resulting in a shorter course and in the recovery of all of them.

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Effect of Ether Peroxides in Wheat Germ Oil on Production of Tumors in Rats.

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Rowntree and associates[1] have reported a high incidence of abdominal sarcoma in Wistar rats, as well as albino rats from the Buffalo and Yale strains, when fed crude wheat germ oil prepared by ether extraction. Great variability occurred in the rate of tumor production. In rats given 1 cc of oil daily tumors appeared in about 100 to 200 days; with 4 cc daily the average was about 54 days. The nature of the neoplastic agent has not been determined but since it appears to be absent from refined ether-extracted wheat germ oil, and wheat germ oils not obtained by means of ether, it is possible that the factor is produced by some action of ether on wheat germ. Owing to the tendency of unsaturated fatty compounds to undergo oxidation while in contact with ether containing

[1] Rowntree, L. G., Steinberg, A., Dorrance, G. M., and Ciccone, E. F., *Am. J. Cancer*, 1937, **31**, 359; Rowntree, L. G., Steinberg, A., and Brown, W. R., *Trans. Assn. Am. Physicians*, 1938, **53**, 199.

peroxides[2] it appeared to us that the neoplastic agent might have arisen through the action of such peroxides, formed in the extraction of wheat germ with ether, although the latter was reported to be peroxide-free before it was used.

We have tested this hypothesis as follows: Two volumes of C. P. peroxide-free anhydrous ether were added to one volume of fresh cold pressed wheat germ oil* in a glass flask fitted with a condenser. This oil was aerated seven hours by means of a slow current of air drawn through H_2SO_4 and glass wool. The mixture was allowed to remain in the flask at room temperature for 36 hours, without protection from light, after which most of the ether was removed by distillation at atmospheric pressure. The mixture was then placed in an evaporating dish and heated on a water bath for 2 to 3 hours, with occasional stirring to remove most of the ether that remained. Following this the "etherized" oil was placed in a brown glass bottle and stored in the refrigerator. A faint trace of ether remained in it. The peroxide content, determined according to directions by Wheeler,[3] was 0.061 M of peroxide per 1000 cc of oil, whereas that of the "unetherized" oil was 0.030 M.

Eight McCollum strain rats, sexes evenly divided and weighing 45 to 55 g each, were used to test the etherized oil. Eight littermates similarly selected were used as controls, *i. e.,* given unetherized oil. All animals were kept in individual cages. During the first 117 days each animal was given 1 cc of the appropriate oil in supplement dishes, after the food pans had beeen removed. After the oil had been consumed the food pans were returned. Later the dosage of oil was increased to 2 cc per rat daily. Larger quantities could not be forced upon the animals without marked reduction in the food intake. McCollum's stock colony ration was used.

After 170 days all of the rats were killed and autopsied. No tumors were found and in all respects the 2 groups were identical.

This result does not constitute a failure to confirm the findings of Rowntree and associates since we employed cold pressed wheat germ oil, found by them to be without sarcogenic effect. It demonstrates, however, that the rat tumor-producing factor is not formed in cold pressed wheat germ oil through the action of ether peroxides, as determined in our rats over a period of time stated by Rowntree and associates to cause a high incidence of tumors in rats fed crude ether-extracted wheat germ oil.

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[2] Rieche, A., *Z. f. angew. Chem.*, 1931, **44**, 896.

* ADM wheat germ oil kindly furnished by the Archer-Daniels Midland Co., Minneapolis, Minn.

[3] Wheeler, D. H., *Oil and Soap*, 1932, **9**, 89; *Chem. Abst.*, 1932, **26**, 3128.