

in which the blood cultures were negative is consistent with the fact that these substances are readily diffusible. Determinations of the specific soluble substances may have application in determining the amount of serum necessary and in following more closely the results of serum therapy.

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Effect of Tar on Experimental Teratoids in the Rat.

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Carrel,¹ White,² Fisher,³ and others obtained metastasising sarcomata by injecting into fowls a mixture of embryo pulp and dilute arsenious acid or embryo in combination with tar. In a previous publication,⁴ it was found that rat embryo combined with arsenic did not produce malignant growths in the rat, and so far as determined, the arsenic did not influence favorably the development of teratoids. In the present experiments, coal tar in various dilutions was combined with embryo pulp to determine its effect on teratoid growth.

From a thick ether extract of coal tar a 1-1000 stock dilution was made in a 5% gelatin and from this the various higher dilutions were made by mixing with one per cent gelatin. Usually about one-half an embryo was drawn directly into a syringe fitted with a needle having a 1-mm. lumen and in the syringe mixed with an equal volume of the tar dilution. The injections into the subcutaneous groin tissue followed immediately. The rats averaged three-quarters grown.

Several factors influence the development of teratoids. The genetic relationship of the animals no doubt, is an important variant in an in-bred strain of animals, such as the one used in these experiments. However, when a 1-500,000 strength of tar was used (experiment 9) all rats showed distinct teratoid growth. When the embryo pulp was mixed with 1-200,000 tar, the teratoid growth took place irregularly and often failed. With tar concentrations of

¹ Carrel, A., *Compt. rend. Soc. de Biol.*, 1925, **93**, 1083.

² White, A. W. M., *J. Cancer Res.*, 1927, **11**, iii.

³ Fisher, A., *Compt. rend. Soc. de Biol.*, 1926, **94**, 1217.

⁴ McJunkin, F. A., and Cikrit, M. F., *Proc. Soc. Exp. Biol. and Med.*, 1929, **27**, 179.

TABLE I.

Experi- ment	No. of rats	Duration of Experiment	Treatment	Results
1	5	5 mo.	2-mm. embryo 1-200,000 tar	One rat has a 22x6x3 mm. teratoid; others negative.
2	6	35 days	4-mm. embryo 1-25,000 tar	No trace of growth.
3	6	52 "	4-mm. embryo 1-25,000 tar	" " " "
4	5	106 "	4-mm. embryo 1-200,000 tar	Two show hard 1-mm. granules; other 3 nega- tive.
5	6	67 "	3-mm. embryo mixed with 1-200,000 tar. Also, 0.5 cc. 1- 1000 tar (6 doses) into op- posite groin	4 negative and 2 with minute teratoid granules
6	7	20 "	7-mm. embryo 1-60,000 tar	2 show indefinite thiek- enings in groin which mi- croscopically contain ter- atoid tissue.
7	5	107 "	2-mm. embryo 1-200,000 tar. Also, 1 cc. 1- 1000 tar was given intrapin- toneal	2 with minute hard gran- ules; 3 negative.
8	9	66 "	4-mm. embryo 1-25,000 tar. In- tramuscular	No trace of teratoid growth.
9	7	31 "	10-mm. embryo 1-500,000 tar	All show growths readily palpable and distinct on dissection. Microscopic- ally they consist of mixed epithelial and mesenchy- mal tissues. The largest is 4-mm.
10	7	128 "	2-mm. embryo 1-200,000 tar. Also, 1 cc. 1- 1000 opposite groin	One with hard teratoid granule and others nega- tive.
11	6	106 "	2-mm. embryo 1-200,000 intra- muscular	5 negative; one animal lost.

1-25,000 (experiments 2, 3, and 8) no proliferation of the embryonic cells was demonstrable.

Embryonic rat cells brought into contact with tar have shown no tendency to undergo malignant transformations. The only influence observed was an inhibition of teratoid development by the tar in the greater concentrations.