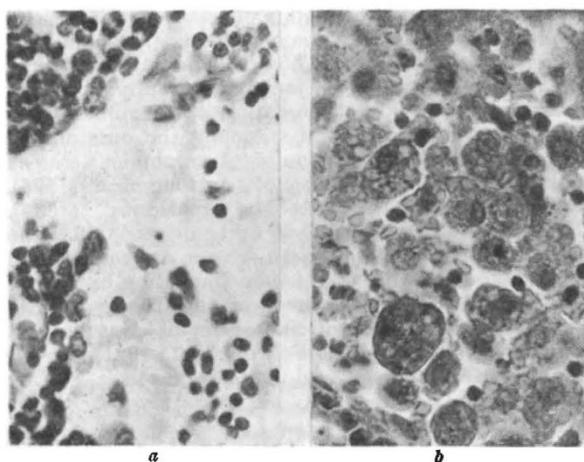


LETTERS TO THE EDITORS

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Formation of Hæmolymph Nodes in Rats Treated with 1:2:5:6-Dibenzanthracene

PREVIOUS investigators¹⁻⁴ have described the spontaneous occurrence of hæmolymph nodes in the rat. As a rule, two nodes situated in the vicinity of the kidneys were found to be the most conspicuous representatives of these structures. Their histological features were studied in detail by these workers; but much uncertainty exists as to the origin and possible function of such nodes, and the same applies to those observed in other species of mammals. It is obvious that useful information might be obtained from experiments aiming at the conversion of ordinary lymph nodes into hæmolymph nodes, and our investigations in this field have led to a number of



PART OF THE CENTRAL SINUS OF A CERVICAL LYMPH NODE. *a*, from a control rat; *b*, from a rat treated with 1:2:5:6-dibenzanthracene. Hæmatoxylin. \times c. 340.

results, some of which appear to be conclusive. This note describes the effect produced in the lymph nodes of rats by treatment with the carcinogenic hydrocarbon 1:2:5:6-dibenzanthracene, the experiments being suggested by previous observations on rats treated with carcinogenic tar⁵.

The hydrocarbon was administered in an aqueous colloidal solution, 27.8 mgm. (that is, 0.1 milli-mole) being dispersed in 100.0 c.c. of a solution of 5.6 per cent glucose and 0.5 per cent gelatine. 1.0 c.c. of this liquid was injected subcutaneously into a series of male pre-adult rats usually five times weekly for a period of about four weeks. This treatment was on the whole well tolerated. For comparison, other rats of similar weights were treated with a control solution (glucose-gelatine medium only), injected in a corresponding manner.

It was found that while the lymph nodes from the control rats were throughout of normal appearance, a number of the lymph nodes from the dibenzanthracene-treated rats showed a red or brownish-red discoloration on their surface, varying in extent and degree. A hæmolymphatic transformation of these nodes was thus indicated. The change occurred in all regions of the body; its intensity—as regards the

number of affected nodes and the amount of discoloration in individual nodes—tended to increase with the duration of treatment, and appeared to be even greater some time after its termination. On microscopical examination, the following principal changes were observed in the structure of these nodes, as compared with the nodes from control animals: (1) a more or less distinct widening of the lymph spaces and corresponding diminution of the lymphatic tissue; (2) the presence in these lymph spaces of red blood corpuscles, frequently in considerable numbers; (3) an increase in the number of free macrophages loaded with red blood corpuscles and a greenish-brown pigment which, on applying the microchemical test for free iron, proved to be 'hæmosiderin'. From the latter findings it is evident that the red cells present in the lymph spaces undergo a process of destruction. An illustration of these histological changes (stated under 2 and 3) is given by the two accompanying photomicrographs, taken at high magnification. Part of the central sinus of a cervical lymph node is shown in each, (*a*) referring to a control animal and (*b*) to a dibenzanthracene-treated animal. It will be seen that in (*a*) the cell content of the sinus is confined to a number of lymphocytes and reticular cells, while in (*b*) the sinus contains in addition many red blood corpuscles as well as a number of free macrophages carrying blood corpuscles and pigment. It is to be noted that the histological changes thus observed agree essentially with the histological features of the renal hæmolymph nodes occurring already in control rats.

A detailed account of this work will be published elsewhere. Further investigations are in progress regarding the possible action of two other carcinogenic hydrocarbons (3:4-benzpyrene, methylcholanthrene) and two related non-carcinogenic hydrocarbons (anthracene, phenanthrene), both groups of substances being employed in a similar manner to 1:2:5:6-dibenzanthracene. So far, it has been found that hæmolymph nodes can be formed in rats treated with either of the two carcinogenic hydrocarbons, while no appreciable changes seem to occur in the lymph nodes of rats treated with either of the two non-carcinogenic hydrocarbons. These results, if confirmed by subsequent work, might indicate that the ability of a polycyclic hydrocarbon to produce hæmolymph nodes in the rat is in some way connected with its ability to produce cancer.

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¹ Vincent, S., and Harrison, H. S., *J. Anat. and Physiol.*, **31**, 176 (1897).

² Drummond, W. B., *J. Anat. and Physiol.*, **34**, 198 (1900).

³ Lewis, Th., *Internat. Monatsschr. Anat. und Physiol.*, **20**, 1 (1903).

⁴ Macmillan, R. E., *Anat. Rec.*, **39**, 155 (1928).

⁵ Lasnitzki, A., *J. Hygiene*, **33**, 392 (1938).

Partial Purification of Cell Growth-Promoting Principles in Adult Tissue Extract

IN a previous note from this Laboratory¹, it was reported that extracts of heterologous adult tissues possess the ability to stimulate *in vitro* the growth of various cells including human epithelium, and the use of adult tissue extracts in wound treatment was suggested. We report below the results of experiments