cene and benzo[*a*]pyrene (from Eastman Organic Chemicals) were purified before use. 100-mgm. samples of freshly purified squalene containing 500 μgm. of carcinogen were exposed at 37° C. in 35 c.c. round-bottomed centrifuge bottles. After the desired time interval, 10 c.c. of methanol was added and then 3 c.c. of cold 1 *N* sodium hydroxide. The mixture was then extracted six times with 5-c.c. portions of petroleum ether. The solvent was removed by evaporation under reduced pressure. Aliquots were taken for fluorometric determination of the hydrocarbon content and for squalene determination[4].

This procedure permitted a quantitative recovery of squalene and each of the hydrocarbons when the extraction procedure was carried out immediately. Complete, or nearly complete, recovery of the hydrocarbons was obtained when mineral oil replaced squalene and the period of exposure at 37° C. was as long as one month.

Only 7 per cent of 7,12-dimethylbenz[*a*]anthracene could be recovered after exposure to squalene for one week at 37° C. Nothing could be recovered after the second week. In the case of 3-methylcholanthrene 30 per cent remained after the first week and only traces were found afterwards. The possible presence of a fluorescence-quenching substance was ruled out. On the other hand, even after five weeks of exposure, 92 per cent of benzo[*a*]pyrene was recoverable. This substance exerted a profound antioxidant activity, for squalene could still be recovered in nearly theoretical amounts. During this period squalene alone was almost completely oxidized. 7,12-Dimethylbenz[*a*]anthracene exerted almost no antioxidant effect although 3-methylcholanthrene was somewhat inhibitory.

Bernheim *et al.*[7] demonstrated that carcinogens inhibit fatty-acid oxidation in the epidermis of the mouse and suggest that carcinogens, by inhibiting peroxide formation, may produce conditions favourable for growth. The observation with benzo[*a*]pyrene is in conformity with the suggestion of these workers. Mueller *et al.*[8] reported some time ago that benzo[*a*]pyrene and 3-methylcholanthrene are destroyed in oxidizing unsaturated fatty acids. It remains to be seen whether the products of the reaction of 3-methylcholanthrene and 7,12-dimethylbenz[*a*]anthracene with squalene are still carcinogenic and whether this reaction is related to the role of squalene in sebum.

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Cortisone in Relation to Infection and Tumour Growth

Nicol, Helmy and Abou-Zikry[1] showed that œstrogens stimulate the reticulo-endothelial macrophages in the spleen, liver, and lymph nodes, and that prolonged œstrogen treatment or stimulation by large doses of œstrogen appears to lead to mobilization of the macrophages in these organs. The reticulo-endothelial system is an important defence mechanism against malignant tumours in general[2,3], and its stimulation therefore probably increases the general defence of the body against tumour growth.

In view of the recent reports that patients being treated with cortisone are more susceptible to infection, and that cortisone enhances the spread of transplanted tumours in animals, it seemed desirable to study the effect of this hormone on the reticulo-endothelial system.

Seventeen male guinea pigs aged about one year were used for the present investigation. The reticulo-endothelial macrophages were studied by giving all the animals one daily injection of trypan blue subcutaneously for the last six days prior to being killed by chloroform. The dosage of the dye was calculated on the basis of 0·8 ml. of a 1 per cent solution in distilled water per 100 gm. body-weight. Seven of the animals were given dye only and were used as controls. The ten remaining animals each received 5–10 mgm. of cortisone (Roussel Laboratories, Ltd.) intramuscularly once daily for one to four weeks in addition to the dye. Specimens were taken from the spleen, liver and lymph nodes and fixed in Heidenhain's 'Susa' fluid. Sections were cut at 10 μ thick and stained with dilute carbol-fuchsin or weak eosin. The activity of the reticulo-endothelial system in the organs studied was measured by the number of dye-bearing cells and the intensity of the vital staining.

The results are as follows. In two of the four animals which received 5 mgm. of cortisone once daily for seven days, the intensity of the vital staining was reduced in the macrophages of the spleen compared with the results in the controls; but no appreciable effect was observed in the macrophages of the liver and lymph nodes. In the remaining animals which received 5 mgm. of cortisone daily for seven days, then 10 mgm. for a further two to three weeks, the reduced intensity of the vital staining in the macrophages of the spleen was still more marked; in those which received hormone treatment for four weeks, the vital staining was also slightly reduced in the macrophages of the liver and lymph nodes.

These preliminary results show that cortisone depresses the activity of the reticulo-endothelial macrophages especially in the spleen, and in this manner probably lowers the defence of the body against infection and new growths.

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