complementary to (IV). The difference in the possible associating surface of the enantiomorphs is much less marked in the α- than in the β-isomers of acetylmethylcholine. Observed differences in the muscarinic activities of the above isomers is therefore explicable in terms of differences in their fit at the muscarinic receptors (IV).

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PATHOLOGY

Neural Tissue and Pulmonary Lesions in Normal and Irradiated Rats injected with Homogenized Homologous Lung Tissue mixed with Freund's Adjuvant

Starting from the assumption that auto-immune processes occur in irradiated animals as well as normal animals[1], we have succeeded in inducing experimental allergic encephalomyelitis in irradiated rats[2]. In order to examine the specificity of that phenomenon, several homogenized organ tissues mixed with adjuvant were used, such as brain, liver, lung and pancreas. Of the organs used in these investigations, lung tissue mixed with adjuvant produced the symptoms of experimental allergic encephalomyelitis.

In the experiments 70 albino rats of mixed breed, weighing about 180 gm., were used. The animals received injections of homogenized homologous lung tissue mixed with adjuvant. The ingredients of the antigen mixture were added as recommended by Lipton and Freund[3]. 1·0 ml. of the antigen mixture was divided into four doses of 0·25 ml. each and injected subcutaneously. The doses were given simultaneously in the ventral part of the abdomen, two on each side. The irradiation dose was 600 r. (220 kV., 15 m.amp., 0·5 copper, 1·0 aluminium, r = 40 cm. ; the dose-rate was approximately 120 r./min.).

The injections were given 24 hr., 3 hr., 30 min. before, and 30 min., 3 hr. and 24 hr. after, irradiation. One group was not irradiated.

Diagnosis of experimental allergic encephalomyelitis was based on the paralysis of limbs and/or marked atactic gait, arthritis was detected by inspection of paws, and lung lesions were determined by inspection of histological sections stained with hæmatoxylin and eosin. Sections of medulla spinalis were also inspected microscopically, after staining with hæmatoxylin–eosin.

Table 1. Incidence of Experimental Allergic Encephalomyelitis (EAE) and Arthritis in Normal and Irradiated Rats before and after Irradiation

Time of antigen injection	Rats suffering from EAE	Arthritis
Control (not irradiated)	15/20	6/15
− 24 hr.	0/10	—
− 3 hr.	7/10	—
− 30 min.	8/10	2/8
+ 3 hr.	7/10	2/7
+ 24 hr.	7/10	—

The results presented in Table 1 show 70–80 per cent incidence of experimental allergic encephalomyelitis in normal and irradiated rats. Only some of the animals with symptoms of experimental allergic encephalomyelitis had arthritis, whereas pulmonary lesions of various degrees were observed in all animals. The encephalomyelitic symptoms were manifested not earlier than four weeks after injections, which is later than when brain plus adjuvant is used. On the other hand, all the animals recovered in the former instance, whereas this was not the case with encephalomyelitis induced by brain tissue.

Histological sections of brain, medulla spinalis and lung were examined. In brain sections, no alterations could be detected. In the lumbar region of medulla spinalis, typical perivascular infiltrations with cells of mononuclear type, and in some regions diffuse scattered inflammatory cells, were observed. In the pulmonary interstitium and in the interalveolar septa, which became plump and protruded into the alveolar lumen, a strong infiltration of inflammatory cells of mononuclear type occurred.

Although it is not possible to explain the non-appearance of experimental allergic encephalomyelitis in the group of rats injected 24 hr. before irradiation, the incidence of pulmonary lesions and encephalomyelitis in normal and irradiated animals leads us to conclude that auto-immune processes occur also in the irradiated organism.

In this instance it is not possible to explain the antigenic relations between brain and pulmonary tissue. A careful examination of the remaining organs and tissues, and the antigenic relationship between them, will be the subject of further investigations.

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Inhibiting Effect of Nicotinamide and Diphosphopyridine Nucleotide on the Methylcholanthrene Sarcoma in Rats

Recently, Oide[1] reported that when a pellet of nicotinamide was intrasplenically implanted in rats after partial removal of the liver, the numbers of mitoses in the liver were greatly reduced. Further, Fujii and Mizuno[2] demonstrated that this compound has a marked inhibitory effect on the epidermal