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Effect of Spaced Radiations on Lymphoid Cells in Tissue Culture.

JOSEPH T. KING AND WILHELM STENSTROM.

From the Department of Physiology and the Cancer Institute, University of Minnesota.

Spear[1] reported that the same delayed lethal effect was produced in cultures of fibroblasts by a 6-hour radiation (radium) whether given as one dose or as 6 one-hour doses on consecutive days.

He compared[2] the effect of single and spaced radiations (radium) using the depression of mitotic rate in cultures of fibroblasts as index of the effect. He found two radiations of 2½ minutes spaced 80 minutes apart more effective than a single 5-minute radiation.

He also found that dividing a 60-minute radiation into 24 doses of 2½ minutes given at intervals of 80 minutes greatly enhanced the effect. The spaced radiations were equivalent to a single dose of 4½ hours. In this study delayed lethal effect was the criterion used.

Faber[3] found that spacing a given dose of radiation did not alter its effectiveness in retarding the growth rate of fibroblast cultures.

In this study the migration rate of mammalian lymphoid cells in tissue cultures has been used to determine the effect of dividing a given dose of X-rays into 2 equal fractions with a time interval between. The extent of migration at 24 hours was used as index of the effect.

The culture technique is described in an accompanying paper.

Fragments of adult rabbit mesenteric lymph node were radiated suspended in serum chick embryo extract at 37.5°C. and subsequently planted. They were kept at this temperature during the interval between radiations. All cultures were kept in the radiation thermostat; those not being radiated were protected with lead.

Radiation data: 200 KV; 30 Ma; filter 2 mm. al; distance 50 cm. Half value layer 0.32 mm. copper.

The single dose was given in 4 minutes at either 150 or 184 r/min.; the split dose in 2 radiations of 2 minutes each with the designated interval.

Seven series (approximately 225 cultures) were studied in which

1 Spear, F. G., *Proc. Roy. Soc. B.*, 1931, **108**, 190.

2 Spear, F. G., *Proc. Roy. Soc. B.*, 1932, **110**, 224.

3 Faber, Borge., *Acta Radiol.*, 1935, Supplement xxi.

the interval between the two 2-minute radiations was 3 hours. The results are given in tabular form.

TABLE I.

4 min.	2 min.-3 hr.-2 min.
108	104
103	103
101	95
96	92
93	89
90	79
95	84

The average for the single dose is 98; for the split dose 92.29. The average difference is 5.71; the standard error of the difference is 1.52.

In 3 series with a 1½-hour interval values of 102 for the single dose and 103 for the split dose were obtained.

In 2 series in which the 2-minute radiations were separated by simple stopping and starting the machine immediately, the value for both the single and split dose was 107.

Conclusion. Spaced radiation was found to be slightly more effective in inhibiting the migration rate of lymphoid cells when the interval between the radiations was 3 hours. Limited data at the indicated shorter intervals failed to reveal this difference.

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Origin of the Sympathetic Trunks in the Chick Embryo.

DAVID S. JONES. (Introduced by E. A. Boyden.)

From the Department of Anatomy, University of Minnesota.

In most current textbooks of neuroanatomy and embryology the sympathetic trunks are described as arising from the spinal ganglia. This conception is based on the older descriptions and upon the more recent experimental investigations of Mueller and Ingvar[1] or Van Campenhout.[2] On the other hand, the sympathetic trunks are described as arising from the neural tube by a few of the earlier workers and by the majority of later workers, particularly by Kuntz.[3]

1 Mueller, E., and Ingvar, S., *Arch. f. mikr. Anat.*, 1923, **99**, 650.

2 Van Campenhout, E., *Arch. de Biol.*, 1931, **42**, 479.

3 Kuntz, A., *J. Comp. Neur.*, 1926, **40**, 389.