

reaction being inhibited by increasing amounts of estrogen.¹¹ However, the possibility that increased production of estrogen might be responsible for uterine desensitization during pregnancy seems to have been eliminated by the observation that as much as 20 times the minimal effective dose of progesterone fails to restore sensitivity in the pregnant mouse.⁶ The true nature of the mechanism of uterine desensitization remains obscure.

Summary. When traumatization of one

¹¹ Rothchild, I., Meyer, R. K., and Spielman, M. A., *Am. J. Physiol.*, 1940, **128**, 213.

horn of the uterus of progesterone-treated ovariectomized mice was delayed until 4 days after the traumatization of the contralateral horn, deciduomata developed only in the horn first stimulated. On the other hand, deciduomata developed in both horns when the uterus was traumatized bilaterally during a single operation. Since the deciduomal reaction is the experimental equivalent of the maternal placenta, these observations suggest that the maternal placenta plays an important role in the desensitization of the pregnant uterus to decidua formation. This is an important factor in the prevention of superfetation.

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Radiosensitivity of Lymphocytes and Granulocytes *In Vitro* According to the Method of Unstained Cell Counts.*

ROBERT SCHREK.

From the Tumor Research Unit, Veterans Administration, Hines, Ill.

The method of unstained cell counts¹ is used in the present investigation to determine the effect of x-rays on the survival of cells in suspensions.

Bacteriologically sterile cellular suspensions were subjected to x-rays and incubated at 37°C. Eosin in Tyrode's solution was added to the radiated and to non-radiated suspensions and the numbers of unstained cells were determined. As in previous investigations, the cells resistant to staining with eosin were presumed to be viable. The suspensions were further studied by the preparation of smears on cover slips and staining with hematoxylin and eosin and by Wright's method.

Cellular suspensions derived from the

thymus and spleen of rabbits were exposed to 1,000 roentgen units. No changes were observed in the number of unstained cells during the first 3 hours of incubation. Following this latent period, the unstained cell count decreased rapidly; after 24 hours, nearly all the cells were stainable with eosin. In control suspensions incubated for 24 hours most of the cells remained resistant to staining.

Exposure of thymic cells to 50r caused a slight but definite decrease in the number of eosin-resistant cells after 24 hours of incubation. Between 50 and 1000r, the greater the dosage, the greater was the decrease in the number of unstained cells after incubation.

Stained smears of thymic suspensions, both before and after incubation for 24 hours, had numerous lymphocytes which were normal in morphologic appearance. Degenerated, poorly stained cells were few in number in the smears of the fresh suspension and were moderate in number after incubation. In contrast, nearly all the lymphocytes in smears of radiated and incubated suspensions were

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¹ Schrek, R., *Am. J. Cancer*, 1936, **28**, 389; *Arch. Path.*, 1943, **35**, 857; *ibid.*, 1944, **37**, 319; *Proc. Soc. Exp. Biol. and Med.*, 1943, **54**, 283; *ibid.*, 1944, **57**, 348.

definitely degenerated and only a few cells were normal in appearance. It was evident that exposure to x-rays and incubation for 24 hours caused marked degenerative changes in the thymic cells.

Suspensions from bone marrow of rabbits were radiated with 1000r and incubated. No differences were observed in the unstained cell counts of radiated and non-radiated suspensions. The granular cells of the bone marrow, unlike the lymphocytes of the thymus and spleen, were apparently resistant to radiation.

The leukocytes of normal human blood were radiated with 1000r and incubated for a period of 7 days. The number of eosin-resistant cells in the radiated suspensions decreased at a more rapid rate than those in the non-radiated suspensions. A study of smears of blood cells in suspensions indicated that the neutrophilic polymorphonuclear leukocytes were destroyed by incubation for 2 to 3 days, the lymphocytes were killed by radiation plus incubation but the eosinophilic leukocytes were resistant to both radiation and incubation.

Suspensions were prepared of the leukocytes from the blood of 12 patients with

leukemia. Unstained cell counts and smears indicated that the leukocytes of lymphocytic leukemic blood were radiosensitive in 4 of the 5 cases, but the cells of myelogenous leukemia, in all 7 cases studied, were resistant to the action of 1000r.

The effect of various factors on the radiosensitivity of lymphocytes was studied. It was observed in preliminary experiments that x-rays had no definite effect on lymphocytes when the radiation and incubation occurred under anerobic conditions.

Summary. Suspensions of lymphocytes were derived from the thymus and spleen of rabbits and from normal and lymphocytic leukemic blood of patients. Radiation with 1000r and incubation at 37°C, caused the death of the lymphocytes after a latent period of 3 hours. Radiation with as little as 50r had a minimal cytotoxic effect on thymic lymphocytes. In contrast, granulocytes in suspensions from the spleen and bone marrow of rabbits and the leukocytes of myelogenous leukemic blood of patients were resistant to radiation with 1000r. It appeared that radiation and incubation had a delayed cytotoxic action on lymphocytes but not on granulocytes *in vitro*.

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Adaptation to Changes in Environmental Humidity at Constant Temperatures.

I. J. KLIGLER,* K. GUGGENHEIM, AND I. SCHWARTZ.

Department of Hygiene and Bacteriology, Hebrew University, Jerusalem.

Much attention has been given in recent years to the physiological reactions associated with climatic changes. Special interest was focused on the response of the body to a sudden change in one or another factor in the climatic environment (temperature, humidity, barometric pressure), rather than to its behavior in a given environment. It is assumed that these adaptation reactions may throw light on the regulations occurring in

the body during acclimatization. Bazett, Sunderman and Scott¹ studied the alteration in the blood volume in humans, and Burton, Scott, McGlone and Bazett,² the alteration in heat exchange and in the partition of heat loss, following changes in temperature condi-

¹ Bazett, H., Sunderman, F. W., and Scott, J. C., *Amer. J. Physiol.*, 1940, **129**, 69.

² Burton, A. C., Scott, J. C., McGlone, B., and Bazett, H., *Amer. J. Physiol.*, 1940, **129**, 84.

* Died on September 23, 1944.