Experiments with denaturated, hydrolysed and heterologous DNA and with purified DNA are in progress.

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Maximum Protection of Mice against 8-MeV Electron Irradiation

Mice can be protected from the effects of whole-body irradiation by a variety of different ways. Sulphydryl compounds given immediately before[1,2], hypoxia induced during[3], or infusion of syngeneic bone marrow given after[4] irradiation all afford major degrees of protection. If each of these agents acted by an independent mechanism, then the $LD_{50/30}$ days dose might be expected to be increased by as much as six to eight fold when all were used together. We now report the results of combining these factors.

Male and female inbred *C3H* mice, 15 weeks old, were irradiated with 8-MeV electrons at a dose rate of 40,000 rads/min. All the mice were anæsthetized with 65 mg/kg 'Nembutal' (Abbott) 30 min before irradiation. The protective measures used were: intraperitoneal cysteamine 200 mg/kg 15 min before irradiation; hypoxia, produced by breathing pure nitrogen for 45 sec (the irradiation being given during the last 5 sec of the nitrogen administration); and intravenous injection of bone marrow cells taken from littermates of the same sex 20 h after irradiation. Antibiotics ('Crystamycin', Glaxo) were injected daily for 30 days—50,000 i.u. sodium penicillin *G* and 50 mg streptomycin per kg mouse body-weight.

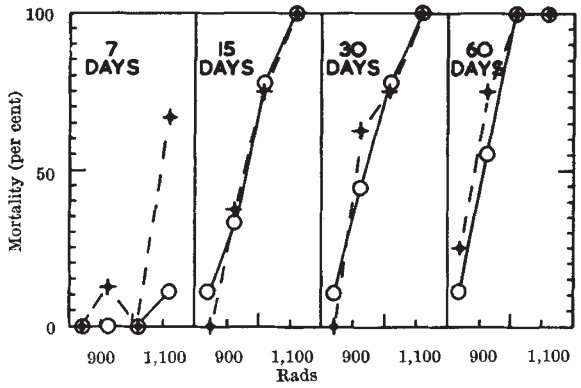

Fig. 1. Percentage mortality of irradiated *C3H* mice at different time intervals after irradiation. The dose received by the protected mice (black crosses) has been divided by 3·8 to compare with the dose received by the unprotected mice (open circles)

The results are shown in the Figs 1 and 2. It is seen (Fig. 1) that a dose reduction factor of approximately 3·8 is observed over a wide range of mortalities when measured at 15, 30 and 60 days after irradiation. From Fig. 2 the $LD_{50/30}$ for the unprotected animals is seen to be 940 rads, while that for the protected animals is 3,520 rads. To compare these figures with equivalent doses of 250-kVp X-rays we have used a relative biological effectiveness of 0·82 for the 8-MeV electrons. This is reasonable when the polarization correction is included[5,6]. The $LD_{50/30}$ unprotected becomes 770-rads X-rays, and the $LD_{50/30}$ protected becomes 2,890-rads X-rays. We believe this latter dose to be the highest $LD_{50/30}$ that has ever been recorded, and it is probably very nearly the highest dose

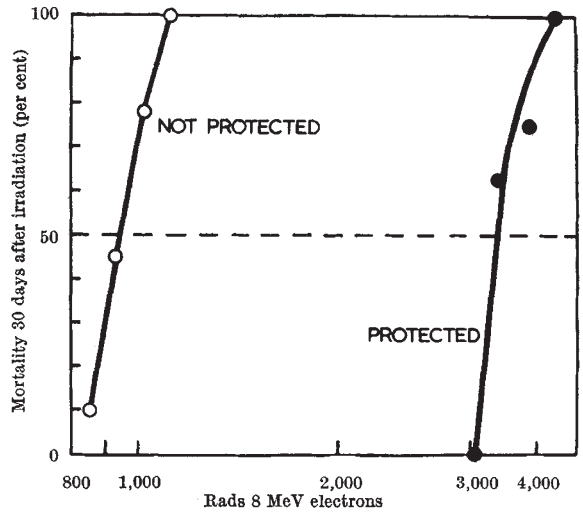

Fig. 2. Percentage mortality of protected and unprotected *C3H* mice at 30 days after irradiation. Dose of radiation on log scale

that is possible with present methods of protection. (Burnett and Doherty[7] reported that some survivors had been obtained in mice given up to 2,600 r. γ-radiation when aminoethylisothiouronium bromide hydrobromide protection was followed by treatment with bone marrow and streptomycin. This might be equivalent to about 2,130 r. 250-kVp X-rays[8].) Although the degree of protection achieved here is very large, it falls far short of the product of each factor multiplied together. These results will be published more fully elsewhere.

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BIOLOGY

Effect of Air Drying and Dressings on the Surface of a Wound

It has been pointed out that the normal dry scab on a wound exposed to the air includes a superficial part of the dermis, and it was suggested that this is because the exposed dermal tissue is dehydrated[1]. Epidermis migrates below the dehydrated fibrous tissue where there is sufficient moisture for the cells to live. If the surface of the wound is deliberately kept moist by covering the wound with an occlusive film, the epidermis will migrate over the surface of the dermis. In this latter event migration of the epidermis is twice as rapid as when it is forced to pass through the fibrous tissue.

The opposite effect has now been demonstrated, namely, that if a wound surface is artificially dried more exten-