

systems (Michel, *Experientia*, 1974, 30, 1195) but not of the tumour tested.

INTERACTION OF IONIZING RADIATION WITH A PLATINUM COMPLEX IN CHINESE HAMSTER CELLS. I. SZUMIEL and A. H. W. NIAS, Glasgow Institute of Radiotherapeutics, Belvidere Hospital.

The effect of the platinum coordination complex, cis-dichlorobis (cyclopentylamine) platinum II-DBCP, has been examined alone and in various combinations with ionizing radiation, using Chinese hamster ovary (CHO) cells in monolayer culture.

After exposure of asynchronous cultures to increasing concentrations of DBCP for 1 h the dose-response curve is similar in shape to that found with ionizing radiation, with parameters: $D_0 = 9.3 \mu\text{g/ml}$, $N = 6.7$. With such asynchronous cultures significant synergism is observed when drug and radiation treatments are combined within a short time interval. Dose modifying factors up to 1.59 are found, depending upon the dose level. Reduction in recovery from sub-lethal radiation damage occurs following such drug treatment.

Studies with CHO cells synchronized by mitotic selection show that DBCP is not a phase-specific drug but that interaction with radiation is more marked in G_1 and Late S than in mid-S phase. Thus, comparison of the observed cell survival levels with those expected from a simple addition of drug and radiation effects, gives a ratio of 0.4 in G_1 and late S but 0.66 in mid-S.

EFFECTS OF COMBINED X-IRRADIATION AND HYDROXYUREA TREATMENT ON MOUSE HAEMOPOIETIC STEM CELLS. G. HODGSON and K. KOSCHEL, Biological Research Unit, Cancer Institute, Melbourne.

Only a small fraction of murine haemopoietic stem cells capable of forming colonies in spleens of lethally irradiated mice (CFU-S) are in S phase. However, the fraction of CFU-S in S phase increases to about 50% in response to depletion. Proliferating CFU-S can be synchronized *in vivo* at the G_1/S border by hydroxyurea. Such cells show a decrease of the extrapolation number, to values not significantly different from one

after irradiation, with change in D_0 from 88 to 74 R.

Both rapidly and slowly proliferating CFU-S show a decrease in D_0 by about 25 R when exposed to hydroxyurea after irradiation. A maximum decrease in survival as a function of x-ray dose is noted when hydroxyurea treatment is given both before and after irradiation.

PYROMELLITIC DIANHYDRIDE AS RADIOSENSITIZER. M. D. ASTUDILLO, M. V. ALVAREZ, A. GOICOECHEA, P. CABILDO and F. SANZ, Instituto de Química Física-Radiobiología-CSIC, Madrid.

This study includes experiments *in vivo* and *in vitro*. The PD given its chemical structure could be counted among the radiosensitizers that act by electron affinity. We determined theoretical electron affinity which reaches a value of 4.78 eV. This compound undergoes typical reactions of an aromatic carboxylic acid anhydride, prepared in water and neutralized at pH 7 for its administration.

Initial experiments *in vivo* show that 1 mg/g is not toxic in mice lineage NMRI by oral and intraperitoneal way. In drug x-ray interaction 0.5 mg/g has no effect but with 1 mg/g the radiosensitizing effect is apparent by oral and intraperitoneal routes.

In vitro experiments on mammalian cells on an established line from a tumour of golden hamster, induced by SV-40 virus, have indicated that PD is not toxic in range 10^{-3} mol- 10^{-7} mol. 10^{-4} mol was used for radiosensitizing tests with γ -rays and the radiosensitizing ability was determined in aerobic and hypoxic conditions.

EFFECTS OF DIAMIDE ON RADIATION INDUCED EMBRYONIC DAMAGE. CH. MICHEL, H. FRITZ-NIGGLI and I. RIEHLE, Strahlenbiologisches Institut der Universität, Zürich.

Diamide (diazenedicarboxylic acid bis (N,N-dimethylamide)) is a known radiosensitizer of anoxic bacteria and anoxic mammalian cells (Harris and Power, *Radiat. Res.*, 1973, 56, 97). We have previously shown that some chemicals (iodoacetamide, tetracyclines, lucanthone) may radiosensitize embryonic damage produced by low radiation doses.