

after acute and fractional irradiation with x-rays. It was found that acute irradiation with sublethal doses increases significantly the central psychodepressive action of Chl, increasing its concentration in the brain. Fractionated irradiation decreases the central effects of Chl, lowering slightly its brain concentration. The obtained results show the significant role of Chl distribution changes after irradiation in its pharmacological action, although there are also some other factors involved in it. It was found that pharmacokinetic analysis makes it possible to evaluate the drug concentration changes in the tissue.

HISTOLOGICAL CHANGES OF THE ORGANS OF RATS AFTER CHRONIC GAMMA IRRADIATION. E. UNGER, "Frédéric Joliot-Curie" National Research Institute for Radiobiology and Radiohygiene, Budapest.

The testicles, small intestine, spleen, liver, bone marrow, kidneys and lungs of rats irradiated with 10 rad/day continuous gamma irradiation for 20, 40 and 60 days respectively were studied histologically 7 days and 10–16 days after finishing the irradiation. There was a severe radiation induced damage, depending on the total dose in the testicles; this damage diminished at the later date after finishing the irradiation as a sign of regeneration. There were slight changes in the small intestine, spleen and liver as well. The bone marrow, kidneys and lungs showed no histological differences from the normal ones.

DIFFERENCES IN SENSITIVITY AND INTERACTION OF DAMAGE INDUCED BY HYPERTHERMIA, UV RADIATION AND γ -RAYS ON CULTURED CELLS OF MALIGNANT AND NON-MALIGNANT ORIGIN. D. S. JOSHI, E. VAN DER SCHUEREN, B. F. DEYS and G. W. BARENDSEN, Biology and Agriculture Division, Bhabha Atomic Research Centre, Bombay.

For induction of reproductive death, cultured cells from a rat ureter carcinoma (RUC) and a mouse mammary carcinoma (M8013) are more resistant to hyperthermia (42°–45°C) than V79–589 cells from Chinese Hamster lung. By contrast, RUC cells are much more resistant to γ -rays than M8013 and V79. Finally, RUC and V79 cells have similar sensitivities to UV radiation while

M8013 is more sensitive. Combined treatments with hyperthermia and γ -rays induce more lethality in RUC and V79 than expected from simple addition. This interaction depends on the temperature, duration of exposure and sequence of treatments.

Hyperthermic treatment at 41°C is more effective after irradiation than before, while no such difference exists at 43°C but at 45°C hyperthermia is more effective before irradiation. Hyperthermia at 41°C does not interact with UV radiation while at 43°C definite interaction is observed. These results point to differences in basic mechanisms involved in damage caused by hyperthermia at 41°C and 43°C respectively.

THE RADIOPROTECTIVE EFFECT OF ALPHA-MERCAPTOPROPIONYLGLYCINE AND ITS COMBINATIONS ON ANIMALS. A. SÁNTA, E. MÁNDI, G. BENKÓ and K. SZ. BODÓ, "Frédéric Joliot-Curie" National Research Institute for Radiobiology and Radiohygiene, Budapest.

We have examined in animal experiments (mice, rats, guinea-pigs, pigeons) the radioprotective effect of a new-type compound, the alpha-mercaptopropionylglycine (Thiola) and its combinations with aminothiols (AET, MEA, cysteine) against sublethal, lethal and supralethal doses of x-ray, gamma and mixed neutron-gamma radiation from an atomic reactor. It has been established that Thiola has a very low toxicity ($LD_{50} = 3020$ mg/kg b.w. on mice, i.p.) and a high protective activity ($DRF = 1.40$ – 1.65), being effective when applied both before and 1–5 h after irradiation. Combined with the mentioned drugs, it moderates the toxicity of aminothiols and potentiates synergistically their protective activity ($DFR = 1.72$). The mechanism of action manifests in enhancing the mitosis rate and, thus, in regenerating the damaged tissues.

EFFECT OF CAFFEINE ON DNA REPAIR OF IRRADIATED MAMMALIAN CELLS. E. MAGDON and E. SCHRÖDER, Central Institute of Cancer Research, Berlin–Buch.

The influence of caffeine on DNA sedimentation from normal and ^{60}Co -irradiated HeLa cells (10 krad) has been investigated. In a concentration range from 10^{-3} to 10^{-2}