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FORMATION OF GIANT HEPATOCYTES IN RESPONSE TO RADIATION

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Radiation induced giant cell formation has been observed in mammalian cell culture[1-2], as well as *in vivo* studies (testes[3-4], adrenals[5]). The present report deals with radiation induced formation of giant hepatocytes in mice.

Swiss albino mice were exposed to 225, 450 and 900 R of whole-body gamma irradiation from a ^{60}Co source. The animals were sacrificed on 1, 2, 3, 7 and 14 days post-irradiation. Pieces of liver were fixed in Bouin's fluid. After routine procedure the sections were cut and stained with Harris haematoxylene and eosin and observed under a light microscope.

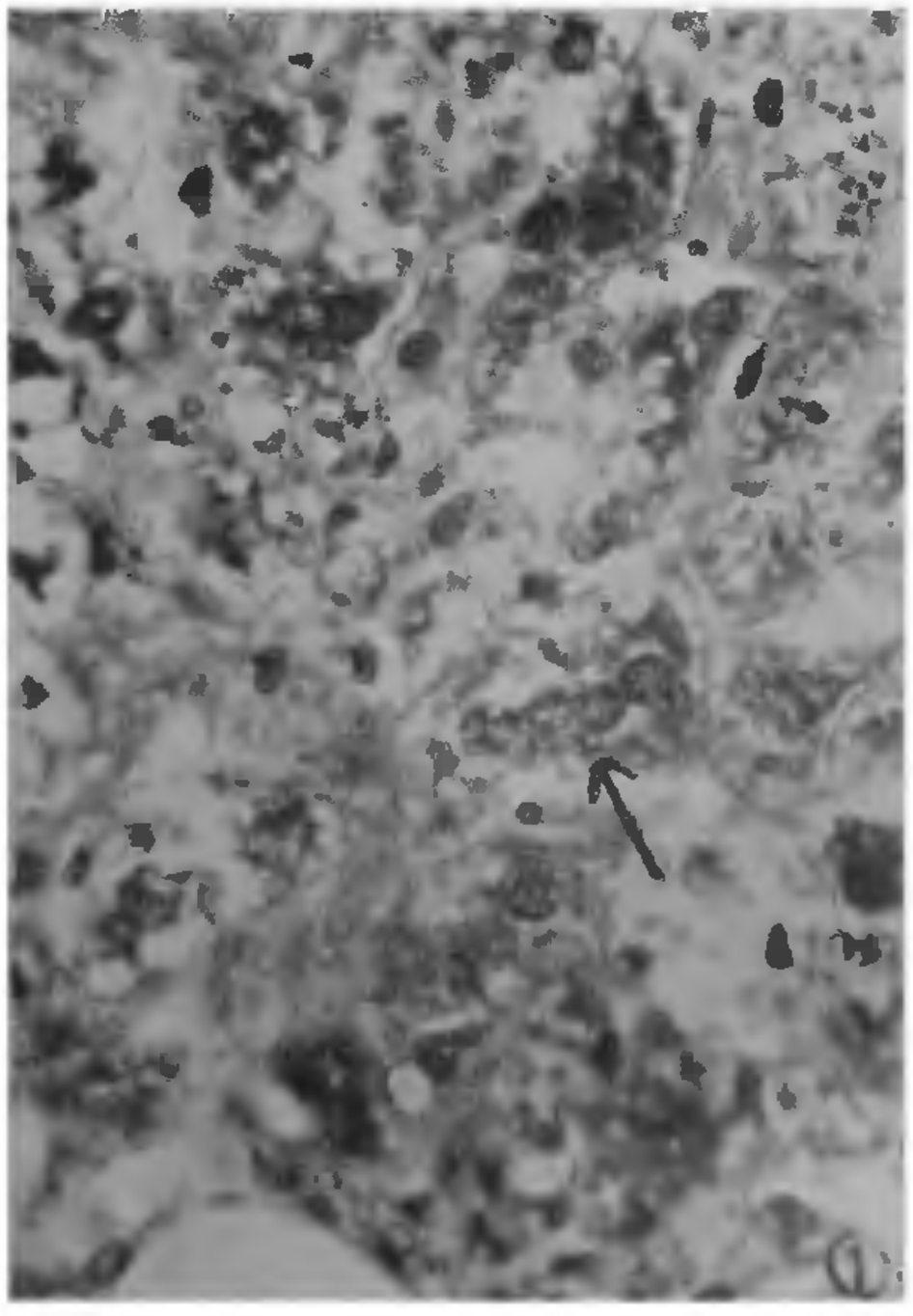

Fig. 1. Liver 2 days after exposure to 900 R of gamma rays showing multinucleated giant hepatocyte (arrow) × 400.

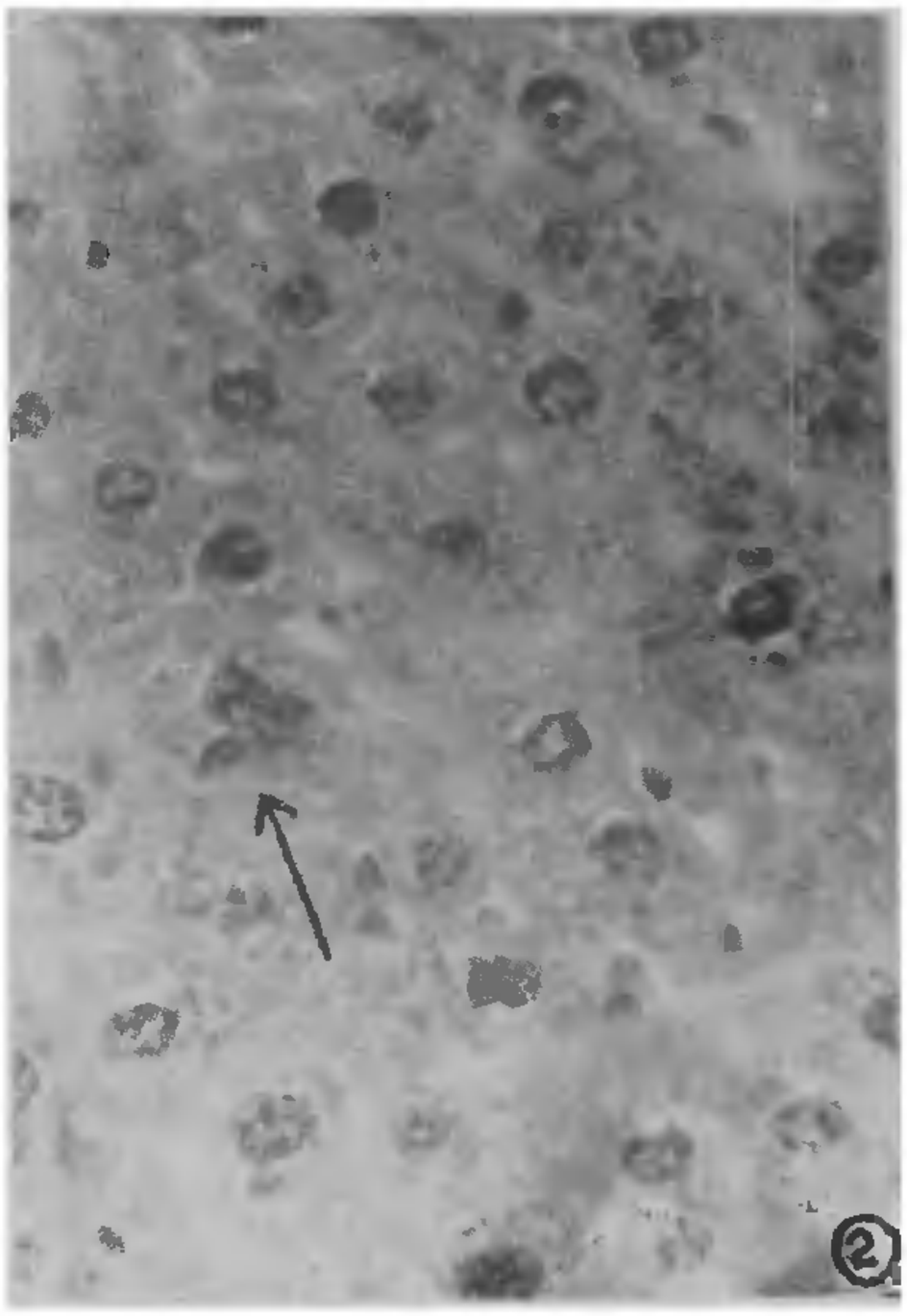

Fig. 2. Liver 3 days after exposure to 225 R of gamma rays showing a trinucleated giant hepatocyte (arrow) × 400.

The giant hepatocytes (cells) were observed in all the three dose groups and two types could be distinguished, (*a*) multinucleated giant hepatocytes, containing three or more nuclei in a larger cytoplasmic mass arranged in the form of a string or in a spherical fashion (Figs. 1 and 2) and (*b*) mononucleated giant hepatocytes, containing single large nucleus (Fig. 3). The multinucleated giant cells were observed on 1, 2 and 3 days post-irradiation, whereas the mononucleated cells at later intervals (7 and 14 days).

Montgomery[1] stated that, (i) multinucleated giant cell formation is the result of fusion of two cells, and (ii) mononucleated giant cell is formed due to the dissociation of cell division from the cell growth. In the present case the former type of cells might have been formed by the fusion of mononucleated and/or binucleated hepatocytes, as different stages of cell fusion have been observed. It has been reported that fatty degeneration of cell membrane in the testes results in the formation of giant cells[4]. In addition to the method of mononucleated giant cell formation as reported earlier[1], these cells in the present study may also be formed by the fusion of nuclei in the binucleated cells (Fig. 4). Giant cell formation is an irreversible

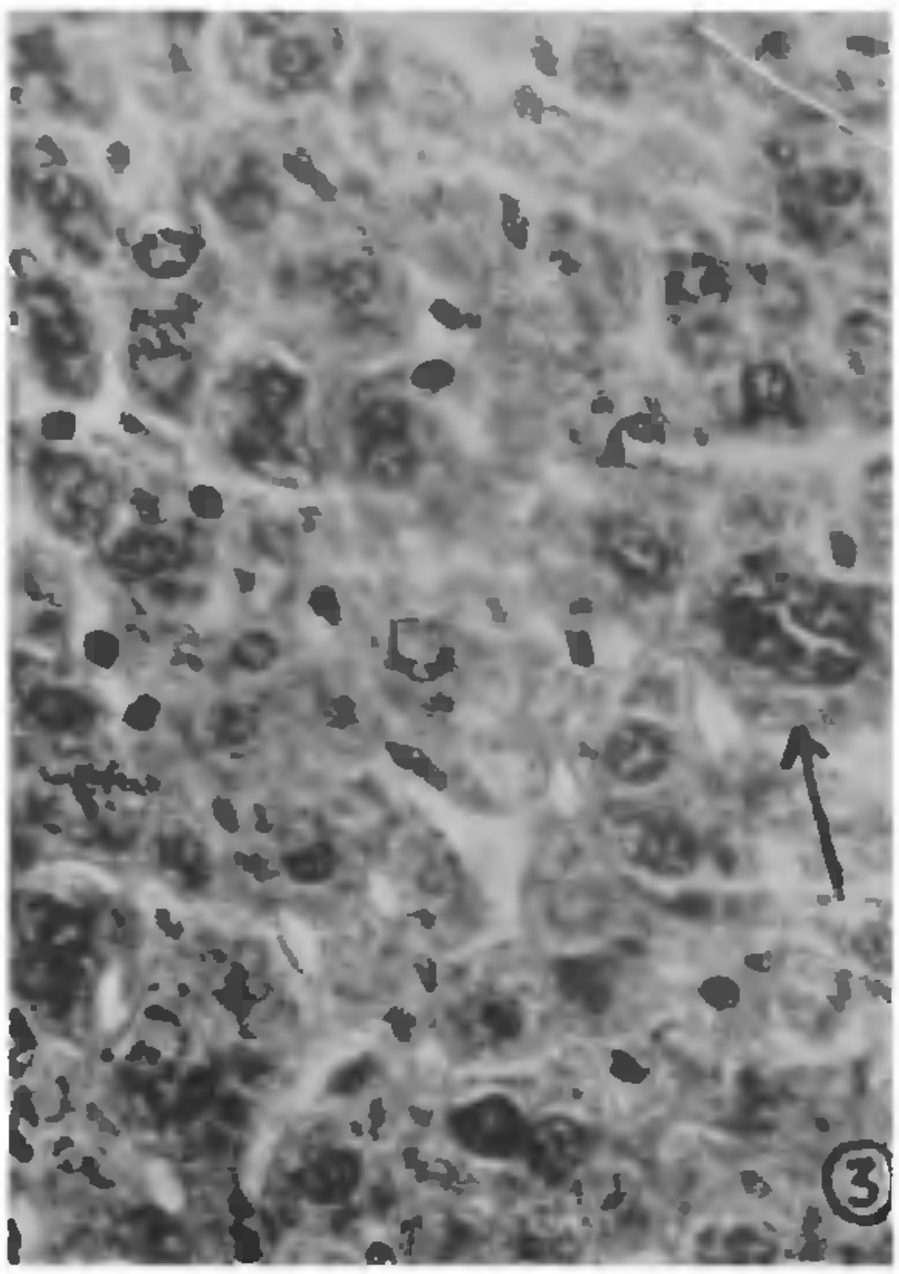

FIG. 3. Liver 14 days after exposure to 900 R of gamma rays showing a mononucleated giant hepatocyte (arrow) × 400.

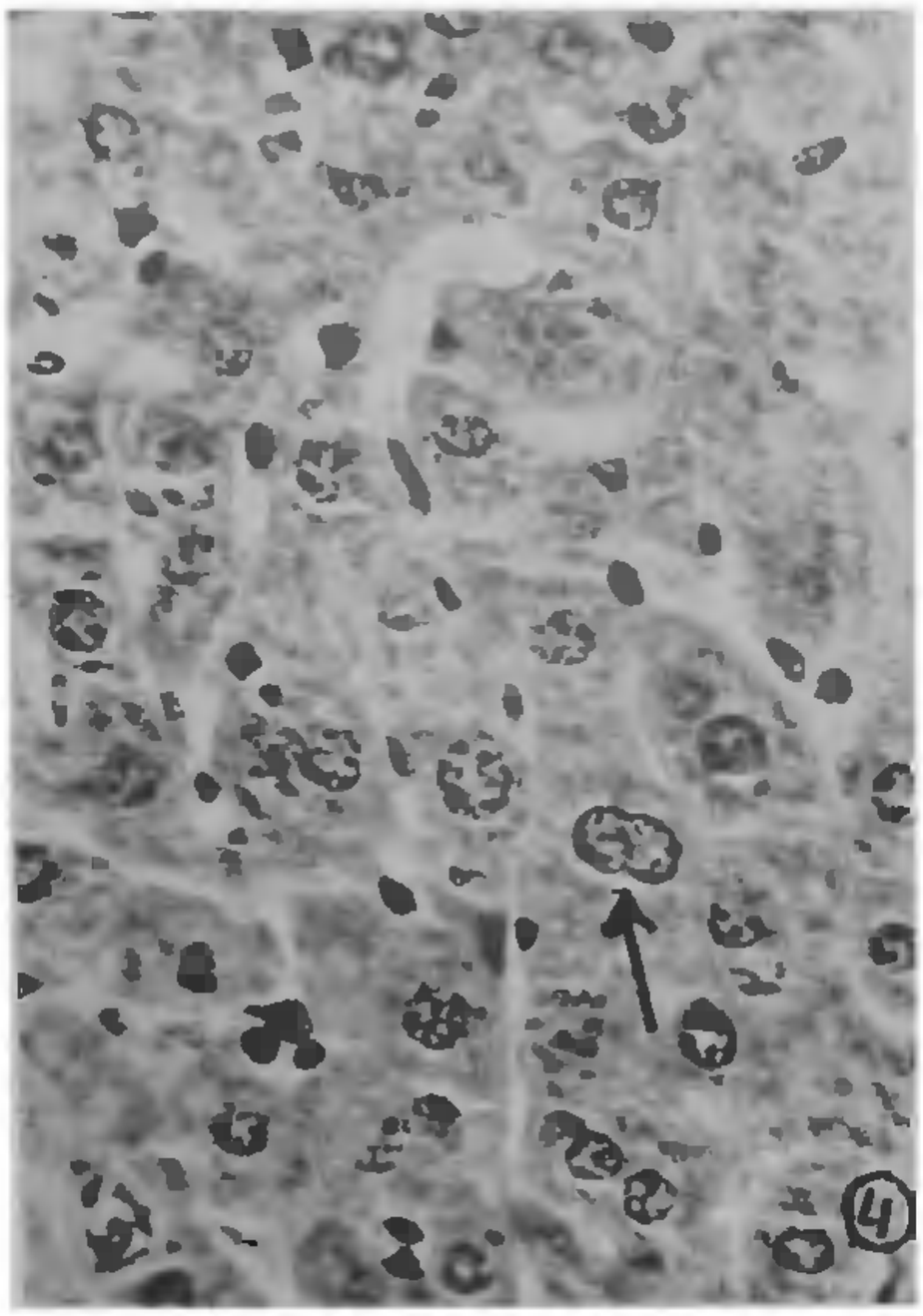

FIG. 4. Liver 14 days after exposure to 900 R of gamma rays showing the fusion of nuclei in a binucleated cell (arrow) × 400.

phenomenon[4] and it seems to be a step before degeneration and cell death[6].

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$^{14}CO_2$ INCORPORATION STUDIES IN PEANUT (*ARACHIS HYPOGAEA* L.) UNDER PHOSPHORUS DEFICIENCY

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PLANTS usually form characteristic symptoms in response to the lack of essential elements. Phosphorus with nitrogen and potassium is classified as a macronutrient. A good supply of phosphorus has been associated with increased root growth. Deficiency of phosphorus causes stunted plant growth and delayed maturity[1]. Phosphorus is indeed the ubiquitous and essential element in the energy transfer processes such as photosynthesis which is so vital to life and growth[2]. Peanut, an important oil yielding crop showed decreased growth and altered metabolism under phosphorus deficiency[3]. In the present study an attempt is made to find out the effect of phosphorus deficiency on $^{14}CO_2$ uptake in peanut.

Uniform seeds of peanut (*Arachis hypogaea* L. Var. TMV–2) were surface sterilized in 0·1% $HgCl_2$ solution, washed repeatedly in distilled water and sown in porcelain pots containing acid washed sand. The cotyledonary leaves were excised gently on 10th day after sowing and thinning was done to 3 plants per pot. The pots were divided into two sets and the