

PURPOSE: To investigate the possibility that the differential G2-phase radiosensitivity of human peripheral blood lymphocytes, found in normal individuals using the 'G2-phase chromosome radiosensitivity assay', could be attributed to heterogeneity in cellular progression to mitosis rather than differences in radiosensitivity.

MATERIALS AND METHODS: Human peripheral blood lymphocytes, from four different donors, were exposed to 50 cGy X-rays and sampled at different times. The progression of cells into mitosis was monitored by 5-bromo 2'-deoxyuridine (BrdUrd) incorporation.

RESULTS: The heterogeneous G2-phase chromosome radiosensitivity among different donors was abolished when homogeneous G2-phase cell populations were scored; they contained similar frequencies of cells in early or late G2-phase.

CONCLUSIONS: The heterogeneous G2-phase chromosome radiosensitivity, usually found in different normal donors, is caused by the analysis of different cell populations rather than reflecting intrinsic differences in radiosensitivity