Ekspresi y-H2AX dengan teknik imunofluoresens sebagai respon adaptif PBMC pekerja radiasi = H2AX expression using imunofluorecens assay as adaptive response of PBMC in radiation workers

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Abstrak

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Latar Belakang : Radiasi pengion pada pekerja radiasi berpotensi menimbulkan kerusakan deoxyribonuclei acid DNA berupa double strand break DSB sebagai awal terjadinya ketidakstabilan genom. Kerusakan DNA diantaranya dapat diamati dengan ?-H2AX sebagai biomarker terjadinya DNA DSB. Pembentukan ?-H2AX dalam inti sel dapat terjadi setelah paparan radiasi sebesar 1 mGy. Penelitian ini bertujuan untuk mengetahui efek radiasi di lingkungan pekerja radiasi sebagai studi respon adaptif peripheral blood mononuclear cell PBMC setelah pemberian radiasi dengan mengamati ekspresi foci ?-H2AX.Metode : Sampel darah dari delapan belas pekerja di iradiasi dosis 0 Gy, 1 Gy, 1.5 Gy, dan 2 Gy. Selanjutnya dilakukan deteksi dan penghitungan foci ?-H2AX sebelum dan setelah iradiasi pada 50 sel PBMC. Jumlah rerata foci ?-H2AX dianalisis menggunakan analisis statistik t-independent test.Hasil : Berdasarkan hasil penelitian diketahui tidak terdapat perbedaan bermakna secara statistik jumlah foci ?-H2AX tanpa perlakuan p=0.807 . Hasil penelitian kurva linier menunjukkan bahwa terbentuknya 2-3 foci per sel setelah penyinaran 2 Gy.Kesimpulan : Dari data ini dapat disimpulkan ekspresi ?-H2AX pada PBMC dalam batas normal antara kontrol dan pekerja radiasi dan tingkat risiko kerusakan DNA DSB relatif sama setelah penyinaran pada dosis 1 Gy, 1.5 Gy, dan 2 Gy.
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ABSTRACT
Background Ionizing radiation in radiation workers has the potential to cause DNA damage in the form of double strand break as the beginning of genomic instability. DNA damage can be observed with H2AX as the biomarker of DNA double strand break. The formation of H2AX in the nucleus can occur after radiation exposure of 1 mGy. This study aims to determine the radiation effects in radiation work environments as a study of adaptive responses of PBMC after radiation by observing H2AX foci expression.Method Blood samples were eightteen workers were irradiated with doses 0 Gy, 1 Gy, 1.5 Gy, and 2 Gy. Further detection and counting of H2AX foci before and after irradiation at 50 PBMCs. The mean number of H2AX foci was analyzed using t independent test.Results Based on the result study, there were no significant differences in the number of H2AX foci without treatment p 0.807 . The results of the linear curve study showed that the formation of 2 3 foci per cell after exposure of 2 Gy.Conclution From this data we can concluded that expression of H2AX in PBMCs within normal limits between control and radiation workers and level of risk DNA DSB damage is relatively similarafter exposure at doses 1 Gy, 1.5 Gy, and 2 Gy.