Respon radioadaptasi terhadap kuantitas sel darah putih (Leukosit) mencit (Mus Musculu L) dengan radiasi gamma Co-60 secara in vivo

Gusti Ngurah Sutapa, author

Abstrak

ABSTRAK
Induksi dosis radiasi rendah memungkinkan terjadinya perubahan pada mekanisme sistem sellular dan molekuler, yang dengan kondisi tertentu, dapat memproteksi sel terhadap efek yang ditimbulkan oleh dosis radiasi tinggi yang diterima berikutnya. Fenomena demikian disebut respon radioadaptasi. Telah dilakukan penelitian respons adaptasi pada 80 ekor mencit jantan berumur 37 - 46 hari, dengan berat dalam rentang 23.79 ? 26.66 gram. Sampel mencit dibagi menjadi 4 kelompok, satu kelompok untuk kontrol sedangkan kelompok lainnya diberi perlakuan penyinaran dengan radiasi gamma Co 60, yang selanjutnya disebut perlakuan tanpa adaptasi, adaptasi I, dan adaptasi II. Pada perlakuan tanpa adaptasi, mencit diberi dosis challenges 1.0, 1.5, 2.0, 2.5, dan 3.0 Gy, perlakuan adaptasi I sampel mencit diberi dosis adaptasi 0.1 Gy sebelum kelima dosis challenges, dan perlakuan adaptasi II dosis kelima dosis challenges diberikan 5 menit setelah menerima dosis adaptasi 0.1 Gy. Jumlah leukosit rata-rata mencit kelompok kontrol (9.51 &lusmn; 0.81) x 103/μl. Umumnya pemberian radiasi pada ketiga perlakuan mengakibatkan jumlah lekosit menunun dan linier dengan kenaikan dosis. Penurunan jumlah leukosit tertinggi terjadi pada perlakuan tanpa adaptasi, kemudian diikuti oleh perlakuan adaptasi I dan perlakuan adaptasi II, dengan representasi koefesien linieritas -0.18, -0.15, dan -0.11.

Ini menunjukkan bahwa respons adaptasi meningkat bila ada interval waktu antara pemberian dosis adaptasi dan dosis challenges. Selain respons pada leukosit, telah diteliti pula respons pada berbagai komponen leukosit, antara lain segmen neutrofil dan limfosit yang jumlahnya cenderung sedikit menurun seperti pada leukosit, serta eosinofil, neutrofil, neutrofil batang, dan monosit yang ternyata tidak memberikan perubahan respons yang signifikan pada ketiga perlakuan.
<hr>ABSTRAK
Low radiation dose induction might changes the mechanism of cellular and molecular system, with a certain condition; it can protect cells to reduce the effect from subsequent high dose. This phenomenon is called radioadaptive response. In this work radioadaptive response has been investigated to 80 male mice with the age from 37 to 46 days, and the weight from 23.79 to 26.66 grams. These samples were divided into 4 groups, one group was a control, and the other groups were treated with Co 60 gamma radiation which will be called as treatment without adaptive, adaptive I, and adaptive II. To the mice from the group of treatment without adaptive, challenge doses of 1.0, 1.5, 2.0, 2.5, and 3.0 Gy were delivered. The same challenge doses were given to the adaptive I and adaptive II treatment group after direct and 5 minutes receiving the adaptive dose of 0.1 Gy. The number of total leucocyt counts from the control group was (9.51 &lusmn; 0.81) x 103/μl. In general radiation doses decrease the leucocytes counts from the three treated groups and linearly related with the increasing dose. The effect of radioadaptive response of the adaptive II treatment group was relatively highter, which were illustrated by the linear coeffecient of the group without adaptive,

adaptive I, and adaptive II with the value of -0.18, -0.15, and -0.11 repectively.

These results indicated that the adaptive response increased when there was interval delivering time between adaptive and challenge dose. It was also found that components of leucocytes such as neutrophyl leucocytes and lymphocytes segments gave lower response with the trend likely the same as leucocytes. Furthermore there were no significant changes of response from the three types of treatment to other components such as eosinophyls, neutrophyl stems, and monocytes.