Kadar Malondialdehid Pada Jaringan Ginjal Tikus Sprague Dawley Yang Diinduksi Hipoksia Hipobarik Intermiten = Malondialdehyde Levels in Kidney Tissue of Sprague Dawley Rats Induced by Intermittent Hypobaric Hypoxia

Kerenhapukh Dwiputri, author

Abstrak

Latar Belakang Hipoksia hipobarik merupakan kondisi hipoksia akibat menurunnya tekanan parsial oksigen dalam darah. Saat keadaan hipoksia, terjadi peningkatan produksi radikal bebas yang menyebabkan peroksidasi lipid dengan hasil akhir malondialdehid (MDA). Hipoksia hipobarik intermiten dapat menginduksi berbagai mekanisme adaptasi untuk melindungi tubuh dari kerusakan yang disebabkan oleh radikal bebas dan dapat diukur salah satunya dengan penurunan kadar MDA. Metode Penelitian ini menggunakan desain eksperimental dengan melibatkan 30 ekor tikus yang dibagi ke dalam 6 kelompok, yakni kelompok hipoksia hipobarik akut, hipoksia hipobarik (HH) 7 kali, HH 14 kali, HH 21 kali, HH 28 kali, dan kelompok kontrol. Pajanan hipoksia hipobarik intermiten dilakukan dengan prosedur hypobaric chamber training. Kadar MDA diukur melalui metode Will’s dengan absorbansi dibaca dengan spektrofotometer pada panjang gelombang 530 nm. Hasil Kelompok 1 (HH akut) dan 2 (HH 7 kali) mengalami peningkatan kadar MDA dibandingkan dengan kadar MDA pada kelompok kontrol. Kelompok 3 (HH 14 kali) mengalami penurunan kadar MDA dibandingkan dengan kelompok 2. Peningkatan kadar MDA kembali terjadi pada kelompok 4 (HH 21 kali) dan kadar MDA kelompok 5 (HH 28 kali) sama dengan kelompok 4. Dapat terlihat tren perubahan antar kelompok perlakuan meskipun secara statistik perbedaan tidak signifikan. Kesimpulan Perlakuan hipoksia hipobarik akut dan hipoksia hipobarik 7, 21, dan 28 kali pada ketinggian setara 10.000 kaki meningkatkan kadar MDA. Akan tetapi pemberian hipoksia hipobarik 14 kali menurunkan kadar MDA.
.....Introduction Hypobaric hypoxia is a hypoxic condition resulting from a decrease in the partial pressure of oxygen in the blood. During hypoxia, there is an increase in the production of free radicals which causes lipid peroxidation with the final result being malondialdehyde (MDA). Intermittent hypobaric hypoxia can induce various adaptation mechanisms to protect the body from damage caused by free radicals and can be measured, one of which is a decrease in MDA levels. Method This study used an experimental design involving 30 rats divided into 6 groups, namely the acute hypobaric hypoxia (1 time), 7 times of hypobaric hypoxia (HH), 14 times of HH, 21 times of HH, 28 times of HH, and the control group. Intermittent hypobaric hypoxia exposure was carried out using the hypobaric chamber training procedure. MDA levels were measured using the Will’s method with absorbance read with a spectrophotometer at a wavelength of 530 nm. Results Groups 1 (acute HH) and 2 (7 times of HH) experienced increased MDA levels compared to MDA levels in the control group. Group 3 (14 times of HH) experienced a decrease in MDA levels compared to group 2. An increase in MDA levels occurred again in group 4 (21 times of HH) and group 5 (28 times of HH) MDA levels were the same as group 4. A trend of change between groups can be seen even though the differences are not statistically significant. Conclusion Acute hypobaric hypoxia treatment and 7, 21, and 28 times of hypobaric hypoxia at an altitude equivalent to 10,000 feet increased MDA levels. However, treatment of 14 times of hypobaric hypoxia reduced MDA levels.