Activity of rat lungs glutathione peroxidase after intermittent exposure to hypobaric hypoxia = Aktivitas glutation peroksidase paru tikus setelah pajanan hipoksia hipobarik intermiten

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Abstrak

Hipoksia hipobarik adalah kondisi dimana tubuh mengalami kekurangan oksigen akibat tekanan parsial oksigen yang rendah. Kondisi ini dapat memicu stres oksidatif dan kerusakan jaringan. Untuk menanggulangi senyawa oksigen reaktif reactive oxygen species/ROS yang terbentuk pada keadaan stress oksidatif, tubuh menghasilkan enzim antioksidan. Namun bagaimana tubuh menanggulangi ROS pada keadaan hipoksia hipobarik intermiten, belum banyak dipelajari. Penelitian ini bertujuan untuk melihat dan membandingkan aktivitas glutation peroksidase GSH- Px paru pada pajanan hipoksia hipobarik intermiten yang berbeda. Sampel yang digunakan adalah paru tikus Sprague Dawley jantan berumur dua bulan dengan berat kurang lebih 200-250 gram. Tikus dikelompokkan menjadi lima kelompok, yaitu kelompok kontrol, dan kelompok tikus yang telah dipaparkan terhadap hipoksia hipobarik sebanyak 1x; hipoksia hipobarik intermiten 1x; 2x; dan 3x. Aktivitas GSH- Px diukur menggunakan RANSEL kit. Normalitas data diolah secara statistik dengan uji Shapiro-Wilk, dan homogenitas diuji dengan uji Levene. Hasil menunjukkan data berdistribusi normal dan homogen. Selanjutnya, dengan uji parametrik ANOVA satu arah ditemukan bahwa tidak terdapat perbedaan bermakna pada aktivitas spesifik GSH-Px diantara grup sampel p = 0.152 . Penelitian ini menyipulkan bahwa aktivitas GSH-Px pada paru tikus tidak dipengaruhi oleh pajanan hipoksia hipobarik intermiten.
<hr>Hypobaric hypoxia is a condition in which the body has low level of oxygen due to low partial pressure of oxygen. This condition may trigger oxidative stress and tissue damage. It is known that the body rsquo s defense mechanism to eliminate reactive oxygen species ROS that were formed during the oxidative stress state is by producing antioxidant enzymes. However, the body rsquo s mechanism to prevent ROS under the exposure of intermittent hypobaric hypoxia has not been well studied. The objective of this research is to observe and compare glutathione peroxidase GHS Px activity in the lungs after exposure to intermittent hypobaric hypoxia of different frequencies. The samples being used were lungs from male Sprague Dawley rats aged two months, weighed 200 250 grams. GSH Px activities were observed and compared in rat lungs that were divided into five groups consisting of control group, and groups of rat lungs that were exposed to hypobaric hypoxia 1x intermittent hypobaric hypoxia 1x 2x and 3x. The activity of GSH Px was measured using RANSEL kit. Normality and homogeneity of the data were processed statistically with Shapiro Wilk test and Levene test, respectively. The results showed that the data were normally distributed and homogeny. Parametric one way ANOVA test found no significant difference in the activity of GSH Px among the sample groups p 0.152 . In conclusion, the activity of GSH Px in the rat lungs is not affected by intermittent hypobaric hypoxia condition.