

## Korelasi antara kadar glutathion dalam jaringan otak dengan hipoksia sistemik berkelanjutan pada tikus = The correlation of reduced glutathione gsh level in brain tissue with continuous systemic hypoxia in rats

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### Abstrak

#### **ABSTRAK**

Pendahuluan: otak adalah organ yang metabolisme energinya sangat bersifat aerobik dan mutlak memerlukan oksigen. Oksigen diperlukan sebagai akseptor elektron terakhir dalam kebutuhan ATP. Bila terjadi hipoksia, aliran elektron terganggu sehingga terjadi pembentukan radikal bebas yang mengakibatkan stres oksidatif dan berpotensi menyebabkan kerusakan jaringan. Glutathion (GSH) merupakan antioksidan endogen yang dapat menangkal radikal bebas sehingga mencegah kerusakan jaringan. Penelitian ini bertujuan untuk analisis hubungan antara hipoksia sistemik selama hari dengan kadar GSH jaringan otak. Metodologi: jaringan otak yang digunakan pada penelitian ini diambil dari tikus Sprague-Dawley jantan (minggu) yang telah terpapar dengan kondisi normoksik sebagai kontrol dan hipoksia sistemik berkelanjutan dalam . Kadar GSH kemudian diukur dan dianalisa menggunakan ANOVA dan post-hoc LSD. Hasil: hasil dari penelitian ini menunjukkan adanya korelasi antara kadar GSH dari jaringan otak dengan durasi paparan hipoksia sistemik berkelanjutan, yang dipresentasikan dengan perbedaan bermakna antara kelompok kontrol dan kelompok terpapar dengan kadar GSH terendah yang ditemukan di hari (ng/mg protein). Hasil uji post-hoc LSD menunjukkan bahwa hanya dengan 1 hari terpapar hipoksia dapat menghasilkan penurunan kadar GSH yang bermakna. Analisa berkelanjutan menggunakan uji Korelasi Pearson menunjukkan bahwa hari terpapar berbanding terbalik dengan kadar GSH Kesimpulan: GSH ditemukan menurun pada jaringan otak yang terpapar oleh hipoksia sistemik berkelanjutan akibat penggunaannya yang terus-menerus.

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#### **ABSTRACT**

Introduction: brain is an organ that has an aerobic energy metabolism and it fully needs oxygen. Oxygen is required as a final electron for the needs of ATP. If hypoxia occurs, the electron flow is interrupted, causing the formation of free radicals that leads to oxidative stress and potentially causes tissue damage. Glutathione (GSH) works as an endogenous antioxidant which can counteract free radicals thereby preventing tissue damage. This study aimed to analyze the correlation between hypoxia within days with GSH levels in the brain tissue. Method: the brain sample of this study was taken from male Sprague-Dawley (weeks old) that has been exposed to normoxic condition as the control, and continuous systemic hypoxia within The GSH level was then measured and analyzed using ANOVA and post-hoc LSD. Results: the result of this study showed that there was a correlation between the GSH level of the brain tissue with the exposure duration of continuous systemic hypoxia, as it presented a significant difference between the control group and exposure groups with the lowest GSH level was found on day (mg). The post-hoc LSD test results showed that even only 1 day of hypoxic exposure may lead to significantly reduced GSH level . Further analysis conducted with Pearson Correlation test showed that the days of exposure is negatively correlated to the GSH levels . Conclusion: GSH was found to decrease in the brain tissue that was exposed to continuous systemic hypoxia

due to the continuous usage.