

## Aktivitas enzim alanin aminotransferase pada jaringan otak tikus yang diinduksi hipoksia sistemik = Activity of alanine aminotransferase alt in brain tissue of systemic hypoxia induced rats

Rizka Ramadhani, author

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### Abstrak

Hipoksia adalah defisiensi oksigen setingkat jaringan. Otak merupakan organ yang mutlak memerlukan oksigen. Hipoksia akan mengganggu integritas otak, dan bermanifestasi menjadi berbagai penyakit. Untuk itu, tubuh memiliki sistem penginderaan oksigen. Pada saat perfusi oksigen jaringan kurang, muncul mekanisme adaptasi.

Penelitian ini bertujuan untuk mengetahui aktivitas enzim alanin aminotransferase (ALT) pada jaringan otak saat keadaan hipoksia sistemik. Penelitian ini merupakan studi eksperimental yang dilakukan kepada 25 tikus Sprague Dawley yang dibagi rata ke dalam 5 kelompok. Kelompok pertama merupakan kelompok kontrol, dipelihara dalam keadaan normoksia. Sisanya dipelihara dalam keadaan hipoksia (10% O<sub>2</sub> dan 90% N<sub>2</sub>) masing-masing selama 1, 3, 7, dan 14 hari. Otak tikus diambil, dan dijadikan homogenat. Dilakukan pengukuran kadar protein jaringan otak untuk setiap sampel. Kemudian, dilakukan pengukuran aktivitas ALT menggunakan spektrofotometer.

Hasilnya dibagi dengan kadar protein untuk mengetahui aktivitas spesifik. Data kadar protein dianalisis menggunakan uji one-way ANOVA. Diperoleh nilai  $p > 0,05$ , artinya kadar protein di jaringan otak normoksia dan hipoksia tidak berbeda bermakna. Hasilnya, nilai  $p > 0,05$  yang berarti aktivitas enzim ALT di jaringan otak tikus pada keadaan normoksia tidak berbeda bermakna dengan keadaan hipoksia sistemik semua kelompok. Sehingga dapat disimpulkan bahwa tidak ada perbedaan signifikan dari kadar protein dan aktivitas ALT pada keadaan hipoksia.

*Hypoxia is a deficiency of O<sub>2</sub> at tissue level. Brain is an organ that absolutely requires O<sub>2</sub>. Hypoxia will disrupt brain's integrity, and manifests as various diseases. Therefore, the body has oxygen sensing system. When oxygen perfusion level decreases, there will be some adaptive mechanisms to cope with the situation.*

This study intends to ascertain the activity of ALT in brain tissue induced by systemic hypoxia. This is an experimental based study. Twenty five rats were divided into 5 groups. First group was placed in the normoxic condition. Four other groups were placed in hypoxic chamber (O<sub>2</sub> 10% and N<sub>2</sub> 90%), each group were placed for 1, 3, 7, 14 days. Their brains were extracted. Tissues' protein level was measured for sample. Subsequently, the measurement of ALT activity was done by using reagent in assay kit.

The results were divided by tissues protein level. Data of tissues protein level were analyzed using one-way ANOVA parametric test. This test obtained p value  $> 0.05$ , meaning there were no significant difference between the control and hypoxic groups. Data of specific ALT activity were analyzed using Kruskal-Wallis non-parametric test. The test obtained p value  $> 0.05$ , meaning there were no significant difference between the control and the hypoxic groups. Hence, it can be concluded that there were no significant difference of protein level and ALT activity in hypoxic brain.