

## ABSTRACT

**Background:** The laboratory examination process consists of pre-analytical, analytical and post-analytical stages. The biggest mistakes often occur in the pre-analytical stage, one of which is hemolysis. Hemolysis samples can have a significant influence on laboratory examination results, especially on several clinical chemistry parameters including examination of the activity of the enzyme lactate dehydrogenase.

**Research Objective:** To determine the effect of hemoglobin levels in serum on the results of examination the activity of the enzym lactate dehydrogenase.

**Research Method:** This type of research is a pure experiment with a post test only control design. Samples in the form of serum came from 13 people and were divided into 6 groups. Each group made 500  $\mu$ L of the mixture, each of which added 0  $\mu$ L, 5  $\mu$ L, 9  $\mu$ L and 18  $\mu$ L of hemolysate to obtain hemoglobin levels of 0 mg/dL,  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL and  $\pm$ 400 mg/dL. 52 data were examined, then analyzed statistically using the *Repeated Measures ANOVA* test using SPSS 25.00 for Windows.

**Results:** Descriptive analysis showed an increase in the mean results of the lactate dehydrogenase enzyme activity examination in serum containing hemoglobin levels. Statistical analysis shows  $p(0.000) < 0.05$ , which means there is a difference in the activity of the lactate dehydrogenase enzyme containing hemoglobin of 0 mg/dL,  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL and  $\pm$ 400 mg/dL. The Pairwise Comparisons test shows a significant level with  $p < 0.05$ .

**Conclusion:** There is an influence of hemoglobin levels in serum on the results of examining the activity of the enzyme lactate dehydrogenase. Hemoglobin levels of  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL and  $\pm$ 400 mg/dL can influence the results of the lactate dehydrogenase enzyme activity examination.

**Keywords:** hemolysis, hemoglobin level, serum, lactate dehydrogenase

## ABSTRAK

**Latar Belakang :** Proses pemeriksaan laboratorium terdiri dari tahap pra analitik, analitik dan pasca analitik. Kesalahan terbesar sering terjadi pada tahap pra analitik salah satunya hemolisis. Sampel hemolisis dapat memberikan pengaruh yang signifikan terhadap hasil pemeriksaan laboratorium terutama pada beberapa parameter kimia klinik termasuk pemeriksaan aktivitas enzim laktat dehidrogenase.

**Tujuan Penelitian :** Mengetahui pengaruh kadar hemoglobin pada serum terhadap hasil pemeriksaan aktivitas enzim laktat dehidrogenase.

**Metode Penelitian :** Jenis penelitian ini adalah eksperimen murni dengan desain *post test only control*. Sampel berupa serum yang berasal dari 13 dan dibagi menjadi 6 kelompok. Setiap kelompok dibuat 500  $\mu$ L campuran yang masing-masing ditambahkan hemolisis sebanyak 0  $\mu$ L, 5  $\mu$ L, 9  $\mu$ L dan 18  $\mu$ L sehingga didapatkan kadar hemoglobin 0 mg/dL,  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL dan  $\pm$ 400 mg/dL Data hasil pemeriksaan sebanyak 52 data, kemudian dianalisis statistik dengan uji *Repeated Measures ANOVA* menggunakan SPSS 25.00 *for windows*.

**Hasil Penelitian :** Analisis deskriptif menunjukkan adanya peningkatan rerata hasil pemeriksaan aktivitas enzim laktat dehidrogenase pada serum yang mengandung kadar hemoglobin. Analisis statistik menunjukkan  $p(0,000) < 0,05$  yang artinya ada perbedaan aktivitas enzim laktat dehidrogenase yang mengandung hemoglobin 0 mg/dL,  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL dan  $\pm$ 400 mg/dL. Uji *Pairwise Comparisons* menunjukkan taraf signifikan dengan  $p < 0.05$ .

**Kesimpulan :** Ada pengaruh kadar hemoglobin pada serum terhadap hasil pemeriksaan aktivitas enzim laktat dehidrogenase. Kadar hemoglobin  $\pm$ 100 mg/dL,  $\pm$ 200 mg/dL dan  $\pm$ 400 mg/dL sudah mampu mempengaruhi hasil pemeriksaan aktivitas enzim laktat dehidrogenase.

**Kata Kunci :** hemolisis, kadar hemoglobin, serum, laktat dehidrogenase