

## CHANGES IN ENZYME ACTIVITY IN LIVER CIRRHOSIS

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### Abstract

Liver cirrhosis is a serious and potentially life-threatening condition that occurs when healthy liver tissue is replaced by scar tissue, leading to reduced liver function. One important aspect of diagnosing and monitoring liver cirrhosis is through the use of enzyme tests. In this article, we will explore the significance of enzyme diagnosis in the development of liver cirrhosis and how it plays a crucial role in managing this condition effectively.

**Keywords:** liver cirrhosis, enzymes, therapy, liver disease, diagnosis.

### Introduction

Enzyme tests, also known as liver function tests, play a vital role in diagnosing and monitoring liver cirrhosis. These tests measure the levels of certain enzymes and proteins in the blood that indicate how well the liver is functioning. The most commonly measured enzymes include alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase, and gamma-glutamyl transferase (GGT). Abnormal levels of these enzymes can signal liver damage and help healthcare providers assess the severity of liver cirrhosis [1].

Early detection of liver cirrhosis is crucial for initiating timely treatment and preventing further complications. Enzyme tests play a key role in diagnosing cirrhosis at an early stage, allowing healthcare providers to monitor disease progression and adjust treatment plans accordingly. By regularly monitoring enzyme levels in patients with liver cirrhosis, healthcare providers can assess the effectiveness of treatment, identify potential complications, and make informed decisions about patient care [2].

While imaging studies such as ultrasound, CT scans, and MRI can provide valuable information about the liver's structure and overall health, enzyme tests offer a more



direct and real-time assessment of liver function. Enzyme tests are less invasive, more cost-effective, and can be easily repeated to track changes over time. They provide valuable insights into how well the liver is functioning and help healthcare providers make informed decisions about patient care [3, 4].

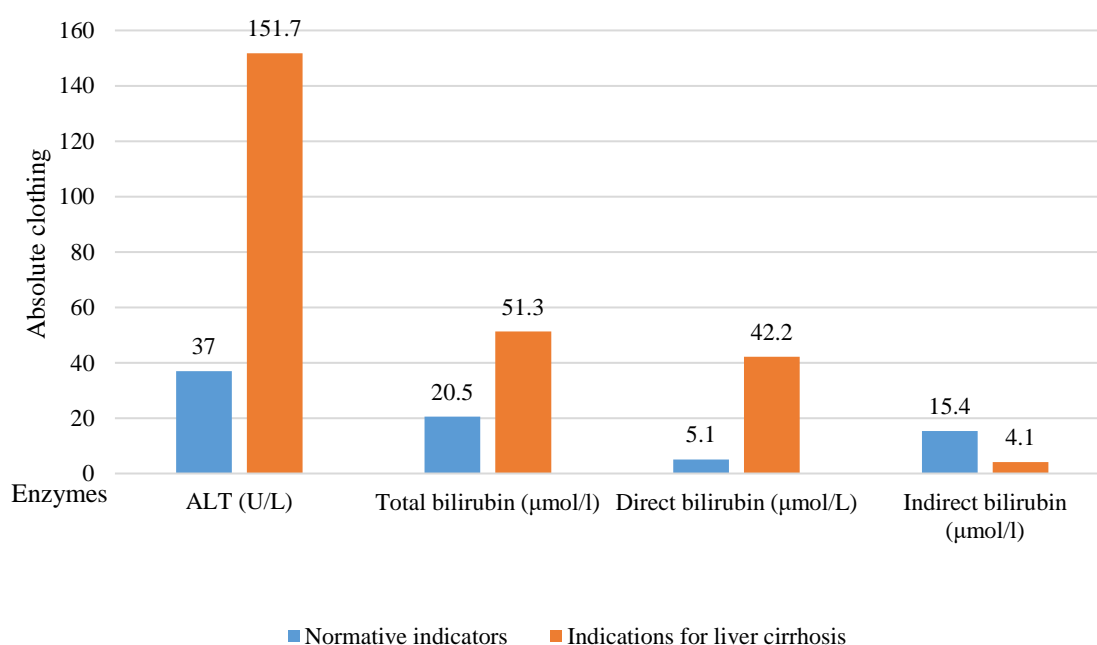
**The research aim:** Assessing alterations in enzyme activity in individuals diagnosed with liver cirrhosis.

### Research Methods and Materials:

The study involved analyzing the biochemical blood parameters of individuals receiving treatment at the clinics of the Research Institute of Immunology and Virology of the Ministry of Health of the Republic of Uzbekistan.

### Results and discussion

Assessment of biochemical markers is crucial in cirrhosis of the liver, as it determines the liver's functional status. The markers included are ALT, bilirubin, and its fractions. The research findings indicated an increase in the concentration of all studied serum enzymes in liver diseases.



**Figure. An Illustration of the Enzyme Levels in the Blood in Liver Cirrhosis**

Alanine aminotransferase (ALT), an enzyme that is used to assess liver function, has normal levels in healthy people: up to 31 U/L in women and up to 37 U/L in men. Our research has revealed a 4.1-fold increase in ALT levels in patients with cirrhosis of the liver, indicating the advanced stages of liver damage. ALT is an enzyme typically present in liver cells, and its levels in the blood rise when these cells are damaged or destroyed. The elevated ALT levels in cirrhosis are indicative of dystrophic changes and impaired liver function, resulting from prolonged liver damage, as demonstrated by our data.

When it comes to liver cirrhosis, ALT remains in the blood as a liver indicator. A high level can also be present in other liver diseases. For an accurate diagnosis, an evaluation of bilirubin and its fractions in the blood is necessary.

Maintaining a healthy level of bilirubin is crucial for the liver's function. We observed a significant elevation in bilirubin levels, exceeding the normal range by 2.5 times. For patients with cirrhosis, the bilirubin levels were even higher: direct bilirubin was elevated by 8.3 times, while indirect bilirubin remained within normal limits.

Elevated levels of bilirubin and its fractions in liver cirrhosis may be associated with impaired liver function and decreased ability of the liver to metabolize and excrete bilirubin. Bilirubin is formed during the breakdown of red blood cells and is metabolized in the liver. In cirrhosis, tissues are destroyed and replaced by connective tissue, leading to disruptions in liver function that can impact bilirubin metabolism.

**In conclusion**, enzyme diagnosis plays a critical role in the development and management of liver cirrhosis. By measuring the levels of specific enzymes in the blood, healthcare providers can accurately diagnose cirrhosis, monitor disease progression, and make informed decisions about treatment. Enzyme tests offer a valuable tool for assessing liver function, identifying complications, and optimizing patient care. Regular monitoring of enzyme levels is essential for managing liver cirrhosis effectively and improving patient outcomes.



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