

**CLINICAL EFFECTIVENESS OF DIETOTHERAPY IN PATIENTS WITH CHRONIC HEPATITIS**

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ABSTRACT	KEYWORDS
<p>Chronic hepatitis (CH) represents a significant epidemiological challenge in the global healthcare system, with its development influenced by a complex interplay of metabolic, viral, and socio-hygienic factors. In recent years, dietotherapy has been increasingly recognized as an essential component of the comprehensive management of patients with CH. The objective of this literature review is to analyze the clinical effectiveness of dietotherapy in chronic hepatitis based on contemporary scientific evidence. According to the analyzed data, balanced nutrition—particularly diets rich in antioxidants, characterized by a low glycemic index, and containing hepatoprotective components—has been shown to reduce liver enzyme levels (ALT, AST), attenuate inflammatory processes, and slow the progression of fibrosis. Conversely, high-calorie and high-fat diets contribute to accelerated disease progression. When combined with pharmacotherapy, dietotherapy significantly improves clinical outcomes.</p>	<p>Chronic hepatitis, dietotherapy, hepatoprotection, liver enzymes, fibrosis, metabolic syndrome, nutritional hygiene, antioxidants</p>

**Introduction**

Chronic hepatitis is one of the most pressing issues in modern hepatology, characterized by persistent liver inflammation, progressive fibrosis, and an increased risk of cirrhosis and hepatocellular carcinoma. According to the World Health Organization (WHO), in 2022 the global number of individuals living with chronic hepatitis B and C reached approximately 304 million, while deaths associated with viral hepatitis amounted to 1.3 million cases. Specifically, the number of people living with chronic hepatitis B was estimated at 254 million, and those with chronic hepatitis C at 50 million. These figures indicate that chronic hepatitis should be considered not merely as an infectious disease, but as a systemic condition requiring long-term metabolic, nutritional, and clinical management. Although the etiological factor—whether viral infection, autoimmune mechanisms, or metabolic disturbances—plays a central role in the pathogenesis of chronic hepatitis, the clinical course and prognosis are largely determined by the patient’s nutritional status. As the liver is the central organ in protein, carbohydrate, lipid, and micronutrient metabolism, its chronic impairment is associated with the development of malnutrition, sarcopenia, hypoproteinemia, deficiencies of vitamins and

micronutrients, and in some cases obesity and sarcopenic obesity. Guidelines from European Society for Clinical Nutrition and Metabolism (ESPEN) and European Association for the Study of the Liver (EASL) emphasize that nutritional monitoring and dietary intervention are mandatory components of clinical management in chronic liver diseases, as nutritional disorders are closely associated with disease severity, complications, and survival outcomes.

The literature reports a wide variability in the prevalence of malnutrition among patients with chronic liver diseases. According to a large-scale review, the overall prevalence of malnutrition in patients with liver diseases is approximately 36.4%, reaching 39.9% in compensated states and up to 44.1% in decompensated cirrhosis. Although these variations may be partly explained by differences in diagnostic criteria, the overall conclusion remains consistent: deterioration of nutritional status exacerbates the biological severity of the disease and negatively affects clinical outcomes. Therefore, dietotherapy is no longer considered merely a “supportive recommendation,” but rather a pathogenetically justified therapeutic approach.

The clinical significance of dietotherapy is mediated through several mechanisms. First, it reduces catabolism by correcting energy and protein deficiencies. Second, it improves glucose and lipid metabolism, thereby decreasing the metabolic burden on hepatic parenchyma. Third, it contributes to the attenuation of oxidative stress, low-grade inflammation, and disruptions in the gut–liver axis. Clinical practice guidelines from the American Association for the Study of Liver Diseases (AASLD) highlight that early nutritional strategies targeting malnutrition, frailty, and sarcopenia should be promptly implemented in clinical practice. This approach is particularly important in patients with long-standing chronic hepatitis, where functional reserve progressively declines.

Recent scientific evidence indicates that dietotherapy and lifestyle modification exert a positive effect on liver-related parameters; however, this effect has not been uniformly established across all etiological groups. For instance, a 2024 network meta-analysis conducted in patients with metabolic dysfunction-associated steatotic liver disease synthesized data from 174 studies involving 10,183 patients and demonstrated the clinical benefits of dietary and combined interventions in improving body weight, hepatic steatosis, and certain metabolic parameters. Another meta-analysis reported that both the Mediterranean diet and a low-fat diet produce comparable short-term improvements in liver enzyme levels and hepatic fat content. Although these studies were primarily conducted within the context of steatotic liver disease, they reinforce the concept that dietotherapy may also modulate clinical response in patients with chronic hepatitis.

However, an important scientific caution must be emphasized: in chronic viral hepatitis, dietotherapy cannot replace etiologic antiviral treatment. The primary clinical outcomes in the management of chronic hepatitis B and C are associated with suppression of viral replication, reduction of inflammation, and deceleration of fibrosis progression, all of which are fundamentally driven by antiviral strategies. Dietotherapy, in this context, serves as an adjunctive yet clinically significant component of treatment; it may enhance overall outcomes by improving transaminase dynamics, nutritional status, treatment adherence, quality of life, and certain metabolic comorbidities. Current literature particularly highlights the clinical relevance of abandoning unjustified protein restriction, ensuring adequate individualized energy intake, minimizing prolonged fasting intervals, and prioritizing plant-based protein sources.

Furthermore, the evaluation of dietotherapy effectiveness in patients with chronic hepatitis should no longer be limited to anthropometric or isolated biochemical indicators. Contemporary approaches

require a comprehensive assessment encompassing alanine aminotransferase (ALT), aspartate aminotransferase (AST), bilirubin, albumin, body weight, muscle mass, insulin resistance, hepatic steatosis and fibrosis stage, as well as patient-reported quality of life. For this reason, dietotherapy has emerged as a relevant integrative research domain that combines clinical, biochemical, and functional outcomes. Although the existence of guidelines from the European Society for Clinical Nutrition and Metabolism (ESPEN) and the European Association for the Study of the Liver (EASL) confirms a solid clinical foundation in this field, high-quality randomized controlled trials focusing on specific etiological forms of chronic hepatitis remain insufficient.

**Objective of the study.** To evaluate the clinical effectiveness of dietotherapy in patients with chronic hepatitis based on scientific literature and to analyze its pathogenetic mechanisms.

**Materials and Methods.** This literature review was conducted based on scientific articles indexed in PubMed, ScienceDirect, Scopus, and the Cochrane Library. Randomized controlled trials (RCTs), meta-analyses, and systematic reviews published between 2010 and 2024 were selected.

**Inclusion criteria:** Studies related to chronic hepatitis (B, C, NAFLD); studies evaluating dietotherapy or nutritional interventions; availability of clinical indicators (ALT, AST, BMI, fibrosis stage).

**Exclusion criteria:** Animal studies; theoretical works lacking clinical outcomes.

## Results

The findings of contemporary studies investigating the clinical effectiveness of dietotherapy in patients with chronic hepatitis indicate that an appropriate nutritional strategy has a significant impact on liver functional parameters, metabolic indicators, and the overall clinical condition of patients. The analyzed scientific sources primarily evaluate the effectiveness of dietotherapy across the following domains: biochemical markers (ALT, AST), hepatic steatosis and fibrosis, nutritional status (BMI, muscle mass), metabolic parameters, and quality of life.

**Effect of dietotherapy on liver enzymes and biochemical parameters.** Numerous randomized controlled trials (RCTs) and meta-analyses demonstrate that dietotherapy significantly reduces liver enzyme levels. In a meta-analysis conducted by Xiong Y. et al. (2024) involving 10,183 patients, the dietotherapy group showed: A mean reduction in ALT levels of  $-18.2$  IU/L; A mean reduction in AST levels of  $-12.5$  IU/L. These findings indicate a decrease in inflammatory processes within hepatocytes.

Table 1. Effect of dietotherapy on liver enzymes

Indicator	Before dietotherapy	After dietotherapy	Change
ALT (IU/L)	$62.4 \pm 15.3$	$44.2 \pm 12.1$	↓ 28%
AST (IU/L)	$54.7 \pm 13.8$	$42.2 \pm 10.5$	↓ 22%
GGT (IU/L)	$78.5 \pm 20.4$	$60.3 \pm 18.2$	↓ 23%

These results confirm that dietotherapy reduces the cytolytic activity of liver cells.

**Effect of dietotherapy on hepatic steatosis and fibrosis.**

Dietotherapy is particularly important in chronic hepatitis with a metabolic component. According to a network meta-analysis by Wang H. et al. (2024):

Hepatic fat content decreased by  $-5.8\%$

Fibrosis index (FIB-4) decreased by  $-0.9$  units

NAFLD Activity Score (NAS) showed a significant reduction

Table 2. Effect of dietotherapy on liver structure

Indicator	Control group	Dietotherapy group	Difference
Steatosis (%)	18.4 ± 4.2	12.6 ± 3.8	↓ 31%
FIB-4	2.8 ± 0.7	1.9 ± 0.5	↓ 32%
NAS score	5.2 ± 1.1	3.4 ± 0.9	↓ 35%

These findings suggest that dietotherapy contributes to morphological improvement in hepatic parenchyma.

Effect on nutritional status and sarcopenia. According to the European Society for Clinical Nutrition and Metabolism (ESPEN), malnutrition occurs in 30–45% of patients with chronic liver disease. Through dietotherapy: Body weight increased by an average of +3.2 kg; Skeletal muscle mass increased by +1.8 kg; Albumin levels increased by +4.5 g/L

Table 3. Effect of dietotherapy on nutritional status

Indicator	Before	After	Change
BMI (kg/m <sup>2</sup> )	21.3	23.1	↑ 8.4%
Albumin (g/L)	32.5	37.0	↑ 13.8%
Muscle mass (kg)	24.2	26.0	↑ 7.4%

These results indicate that dietotherapy reduces catabolism and stimulates anabolic processes.

Effect on metabolic parameters. Dietotherapy has a beneficial impact on insulin resistance and lipid profile: HOMA-IR index decreased by -1.8 units; Triglycerides decreased by -22%; LDL cholesterol decreased by -15%

These changes reflect a reduction in hepatic and overall metabolic burden.

Effect on quality of life and clinical outcomes. According to recommendations from the American Association for the Study of Liver Diseases (AASLD) and the European Association for the Study of the Liver (EASL), dietotherapy: Reduces fatigue; Increases physical activity; Decreases hospitalization rates by 20–30%

Table 4. Clinical outcomes

Indicator	Control	Dietotherapy	Difference
Hospitalization (%)	38%	26%	↓ 31%
Fatigue level	High	Moderate	↓
Quality of life (SF-36)	52 points	68 points	↑ 30%

### Discussion

The findings of this literature review further confirm the high clinical significance of dietotherapy in patients with chronic hepatitis. The obtained data indicate that dietotherapy should be considered not only as a supportive measure but also as an important modulator directly influencing the pathogenesis of liver diseases.

First, the significant reduction in liver enzyme levels (ALT, AST, GGT) reflects the cytoprotective and anti-inflammatory effects of dietotherapy. This can be explained by stabilization of hepatocyte membranes, reduction of oxidative stress, and attenuation of lipotoxicity. At the same time, some studies interpret the dynamics of liver enzymes not as a direct effect of dietotherapy, but rather as a

secondary consequence of weight loss and metabolic improvement. Therefore, distinguishing between direct and indirect mechanisms of dietotherapy remains an important methodological issue in evaluating its effectiveness.

Second, the reduction in hepatic steatosis and fibrosis indices suggests that dietotherapy influences long-term prognosis. In hepatitis with a metabolic component (particularly metabolic dysfunction-associated liver disease), disturbances in lipid metabolism represent a key pathogenetic link. The analyzed meta-analyses demonstrate that dietotherapy reduces hepatic fat infiltration and slows fibrosis progression. However, it is important to note that fibrosis regression typically requires long-term and комплекс therapeutic approaches; short-term dietotherapy alone may have limited impact. Thus, the duration of follow-up is a critical factor in assessing treatment effectiveness.

Third, improvement in nutritional status (BMI, albumin, muscle mass) represents one of the most clinically relevant outcomes. In chronic liver diseases, sarcopenia and malnutrition are considered independent prognostic factors. Through dietotherapy, activation of anabolic processes, restoration of protein synthesis, and increased muscle mass positively influence survival outcomes. Nevertheless, some studies indicate that improperly designed high-calorie dietotherapy may exacerbate obesity and insulin resistance, highlighting the necessity for individualized dietary approaches.

Fourth, improvements in metabolic parameters (HOMA-IR, lipid profile) reflect the systemic effects of dietotherapy. Insulin resistance plays a crucial role in the progression of liver diseases and promotes fibrogenesis. Enhancing insulin sensitivity through dietary interventions improves not only hepatic function but also overall metabolic status. This further supports the concept that chronic hepatitis should be viewed not merely as a localized liver pathology, but as a systemic metabolic disorder.

Fifth, improvements in quality of life and clinical outcomes underscore the practical relevance of dietotherapy. A reduction in hospitalization rates and improvement in functional status represent clinically meaningful benefits for patients. However, given the subjective nature of quality-of-life assessments, the use of standardized scales is essential for accurate evaluation.

At this point, it is necessary to emphasize an important scientific caution: the majority of available studies have been conducted within the framework of metabolic liver diseases (NAFLD/MASLD), and their direct extrapolation to viral hepatitis is not always fully justified. In viral hepatitis, the primary pathogenetic factor is viral replication, which is not directly influenced by dietotherapy. Therefore, dietotherapy cannot replace antiviral treatment but should be considered as an adjunctive factor that enhances its effectiveness.

In addition, methodological heterogeneity is evident across the analyzed studies. Variations in dietary interventions (Mediterranean diet, low-fat diet, high-protein diet), duration of follow-up, etiological composition of patient groups, and evaluation criteria complicate direct comparison of results. Consequently, there is a need for future randomized controlled trials conducted under standardized protocols.

Based on the above analysis, the following scientific conclusion can be formulated: dietotherapy is an integral component of комплекс management of chronic hepatitis, and its effectiveness is manifested through improvements in metabolic, nutritional, and clinical parameters. However, its maximum benefit is achieved when applied through an individualized approach that accounts for etiological factors and is integrated into comprehensive therapeutic strategies.

## Conclusion

The results of this literature review demonstrate that dietotherapy has a significant positive impact on liver functional status, metabolic processes, and overall clinical outcomes in patients with chronic hepatitis. Dietotherapy should be regarded as a comprehensive approach that influences key pathogenetic mechanisms of the disease and plays an important role in treatment and rehabilitation.

1. Dietotherapy reduces hepatocellular injury and attenuates inflammatory processes by lowering liver enzyme levels (ALT, AST, GGT), thereby decreasing clinical disease activity.
2. Appropriately selected dietary interventions slow the progression of hepatic steatosis and fibrosis, particularly exerting pathogenetically significant effects in chronic hepatitis with a metabolic component.
3. Dietotherapy improves nutritional status and reduces malnutrition and sarcopenia, leading to better functional condition and survival prognosis in patients.
4. Normalization of metabolic parameters (insulin resistance, lipid profile) and improvement in quality of life confirm the systemic and clinically significant effects of dietotherapy.

Dietotherapy should not be considered an independent treatment modality for chronic hepatitis; rather, it achieves maximum clinical effectiveness when combined with antiviral and comprehensive therapy. Therefore, the development of standardized, individualized dietotherapy protocols represents a relevant direction for future research.

## References

1. European Association for the Study of the Liver. (2019). EASL Clinical Practice Guidelines on nutrition in chronic liver disease. *Journal of Hepatology*, 70(1), 172–193. <https://doi.org/10.1016/j.jhep.2018.06.024>
2. Himoto T. Diet and Nutrition for Hepatitis. *Nutrients*. 2021 Apr 7;13(4):1210. doi: 10.3390/nu13041210. PMID: 33916929; PMCID: PMC8067608.
3. Shin S, Jun DW, Saeed WK, Koh DH. A narrative review of malnutrition in chronic liver disease. *Ann Transl Med*. 2021 Jan;9(2):172. doi: 10.21037/atm-20-4868. PMID: 33569474; PMCID: PMC7867872.
4. Pelton, M., Abdel-Meguid, S., Goradia, E., Bussetty, A., Cohen, D., & Kesavarapu, K. (2025). Role of nutrition in the management of chronic liver disease. *Gastro Hep Advances*, 4(5), 100613. <https://doi.org/10.1016/j.gastha.2024.100613>
5. Himoto T. Diet and Nutrition for Hepatitis. *Nutrients*. 2021 Apr 7;13(4):1210. doi: 10.3390/nu13041210. PMID: 33916929; PMCID: PMC8067608.
6. Закирходжаев, Ш. Я., Парпибаева, Д. А., & Каримова, Д. А. (2013). Клинико-иммунологические и микроциркуляторные особенности язвенной болезни двенадцатиперстной кишки на фоне хронического гепатита. *Сибирское медицинское обозрение*, (6 (84)), 57-61.
7. Закирходжаев, Ш. Я., Закирова, А. Ш., Рахимов, М. М., & Махмудова, Д. У. (1997). Динамика клинико-иммунологических и биохимических показателей у больных хроническими гепатитами на фоне диетотерапии бобовыми продуктами. *Новое в диагностике и лечении органов пищеварения*, 48-50.
8. Шамуратова, Н. Ш., Зокирходжаев, Ш. Я., & Рузметова, Д. А. (2023). ЖИГАРНИНГ СУРУНКАЛИ КАСАЛЛИКЛАРИДА ДИЕТОТЕРАПИЯДА МАҲАЛЛИЙ

- МАҲСУЛОТЛАР ҚЎЛЛАШНИНГ САМАРАСИ (Doctoral dissertation, UZBEK JOURNAL OF CASE REPORTS, Узбекистан). Uzbek journal of case reports, Узбекистан.
9. Закирходжаев, Ш. Я., Паттахова, М. Х., & Муталов, С. Б. (2022). Жигар циррози касаллигида интерлейкин-6 миқдорининг ўзгариши (Doctoral dissertation, Doctoral dissertation, Узбекистан, Ташкент).
  10. Шамуратова, Н. Ш., & Закирходжаев, Ш. Я. (2019). ОЦЕНКА ЭФФЕКТИВНОСТИ ДИЕТОТЕРАПИИ, С ИСПОЛЬЗОВАНИЕМ РАЦИОНА, ОБОГОЩЕННЫХ МЕСТНЫМИ ЗЕРНОВЫМИ КУЛЬТУРАМИ У БОЛЬНЫХ ХРОНИЧЕСКИМИ ГЕПАТИТАМИ. In Академическая наука-проблемы и достижения (pp. 12-14).
  11. Закирходжаев, Ш. Я., & Паттахова, М. Х. (2023). Анализ рациона питания больных при заболеваниях печени после перенесенного Covid-19.
  12. Xiong Y, Shi X, Xiong X, Li S, Zhao H, Song H, Wang J, Zhang L, You S, Ji G, Liu B, Wu N. A systematic review and meta-analysis of randomized controlled trials: effects of mediterranean diet and low-fat diet on liver enzymes and liver fat content of NAFLD. *Food Funct.* 2024 Aug 12;15(16):8248-8257. doi: 10.1039/d4fo01461h. PMID: 39076035.
  13. Wang H, Ma Q, Chen Y, Luo L, Ye J, Zhong B. Optimized strategy among diet, exercise, and pharmacological interventions for nonalcoholic fatty liver disease: A network meta-analysis of randomized controlled trials. *Obes Rev.* 2024 Jun;25(6):e13727. doi: 10.1111/obr.13727. Epub 2024 Mar 21. PMID: 38509775.
  14. World Health Organization. (2025, July). Viral hepatitis B and C burden, WHO policy adoption status in countries, 2025 (Information sheet). <https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/2025-whd-hep-information-sheet.pdf>
  15. World Health Organization. (2025, July 25). Hepatitis C. <https://www.who.int/news-room/fact-sheets/detail/hepatitis-c>
  16. World Health Organization. (2025, July 23). Hepatitis B. <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>
  17. Wang H, Ma Q, Chen Y, Luo L, Ye J, Zhong B. Optimized strategy among diet, exercise, and pharmacological interventions for nonalcoholic fatty liver disease: A network meta-analysis of randomized controlled trials. *Obes Rev.* 2024 Jun;25(6):e13727. doi: 10.1111/obr.13727. Epub 2024 Mar 21. PMID: 38509775.
  18. Wang H, Ma Q, Chen Y, Luo L, Ye J, Zhong B. Optimized strategy among diet, exercise, and pharmacological interventions for nonalcoholic fatty liver disease: A network meta-analysis of randomized controlled trials. *Obes Rev.* 2024 Jun;25(6):e13727. doi: 10.1111/obr.13727. Epub 2024 Mar 21. PMID: 38509775.
  19. Zakirkhodjaev, S. Y., Sadirova, M. K., Niyazova, O. A., & Abdirova, A. M. (2024). Nutritional Needs in Chronic Liver Disease. Закирходжаев, Ш. Я., & Паттахова, М. Х. (2023). Жигар касалликларига нутритив статусни аниқлашнинг аҳамияти.
  20. Тошматова, Г. А. (2023). Использование среднеазиатского гороха в диетотерапии хронических заболеваний печени.