



**Scientific Conference on Multidisciplinary Studies**

Hosted online from Bursa, Turkey

Website: econfseries.com

11<sup>th</sup> August, 2025

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## **THE ROLE OF BALANCED AMINO ACIDS IN THE TREATMENT OF PATIENTS WITH SEPSIS**

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This thesis presents a comprehensive clinical analysis of the effectiveness of using balanced amino acids as part of complex parenteral nutrition in patients with multiple organ failure resulting from sepsis.

The study involved 80 patients with sepsis and multiple organ failure, divided into two groups: the main group (A, n=43) and the comparison group (B, n=37). In the main group, balanced amino acids (Akumin Hepa, Akumin-Nefro) were included in the complex therapy.

Energy expenditure in group A showed a decreasing trend by day 5 ( $2612 \pm 113$  kcal/day  $\rightarrow$   $2328 \pm 329$  kcal/day), while in group B, this change was only observed on day 14.

Nitrogen loss also decreased faster in group A, dropping from  $22.9 \pm 1.1$  g/day to  $18.3 \pm 1.1$  g/day by day 5.

Indicators of protein metabolism, particularly albumin and transferrin levels, increased significantly and earlier in group A (albumin  $24.2$  g/L  $\rightarrow$   $33.28$  g/L,  $p < 0.05$ ).

C-reactive protein levels decreased rapidly in group A by day 5 ( $123.25$  mg/L  $\rightarrow$   $79.82$  mg/L), whereas in group B the decrease was slower.

Fibrinogen levels significantly decreased only in group A by day 10 ( $5.35$  g/L  $\rightarrow$   $4.09$  g/L,  $p = 0.04$ ). The leukocyte intoxication index (LII) decreased from  $4.56$  to  $1.86$ , indicating reduced endogenous intoxication. The Nutritional Risk Index (NRI) in group A approached normal values by day 14 ( $97.6 \pm 0.3$ ,  $p < 0.05$ ), while in group B this was achieved only by the end of day 9. The Maastricht index dropped to 0 in group A by day 7, indicating the elimination of protein-energy deficiency.



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In group A, SOFA scores decreased from 7.34 to 4.75, and APACHE II scores from 31.4 to 18.4, indicating improvement in the overall condition and degree of organ failure.

In conclusion, the study results show that combined nutrition including balanced amino acids in patients with sepsis and multiple organ failure is associated with:

- Rapid reduction of inflammatory reactions
- Early normalization of metabolic status
- Elimination of protein and energy deficiency
- Significant decrease in SOFA and APACHE II severity scores

This proves the clinical effectiveness of such therapy.