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## **Effect of glutamine-supplemented total parenteral nutrition on the small bowel of septic rats.**

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### **Abstract**

In order to study the effect of total parenteral nutrition (TPN) with or without glutamine supplementation in septic rats, septic Wistar albino rats were randomly assigned to receive 0.23 g of nitrogen and 113 kJ (100 g BW)(-1) per day in the form of amino acids with (group 2) or without (group 1) glutamine supplementation or 10% (w/v) glucose only (group 3). After 4 days of TPN treatments, rats receiving glutamine-supplemented TPN had a cumulative nitrogen balance of -24.4 +/- 3.3 mg N, which was significantly ( $P < 0.001$ ) better compared to other TPN-treated groups. Septic rats of group 2 survived sepsis significantly ( $P < 0.001$ ) better than those in groups 1 and 3. Glutamine-supplemented TPN treatment resulted in significant increases in jejunal weight ( $P < 0.001$ ), DNA and protein contents ( $P < 0.001$ ), villous height ( $P < 0.001$ ) and crypt depth ( $P < 0.001$ ) when compared with septic rats of group 1. Septic rats of group 2 extracted and metabolised glutamine by the small bowel at higher rates ( $P < 0.001$ ) than that observed in septic rats of group 1. Increases in jejunal glutaminase (38.2%,  $P < 0.001$ ) and decreases in glutamine synthetase (41.7%,  $P < 0.001$ ) activities were observed in response to glutamine-supplemented TPN treatment. It is concluded that the administration of glutamine-supplemented TPN is beneficial to the small bowel of septic rats