

Nourishing the Dysfunctional Gut and Whey Protein

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Objective:

The purpose of this publication is to review the mechanisms of the dysfunctional gut during critical illness and discuss the role of whey protein in decreasing inflammation and promoting better tolerance of enteral nutrition.

Background:

Up to 50% of critically ill patients experience impaired gastric motor function and associated feeding intolerance. In addition, gastric emptying dysfunction alone affects approximately 50% of these patients. Management of gastric motility disorders such as high gastric residual volumes or nausea and vomiting, feeding intolerance, constipation and hypermotility with diarrhea may have substantial relevance in determining clinical outcome, costs and long-term prognosis in the critically ill patient.

Key Points of Author:

- ***“The dysfunctional gut is very frequent in critically ill patients.”*** Causes of abnormal gut function in the critically ill include impaired enteric nerve and smooth muscle function, disease manifestations, inflammation, surgery, medications, electrolyte disturbances, hyperglycemia, sepsis and increased intracranial or intra-abdominal pressures.
- ***“The recognition of the mechanisms and clinical signs of this disease (gut manifestation of disease process) is often difficult and underestimated.”*** Abnormalities in gastric emptying can affect 50% of critically ill patients in general and 80% of patients with increased cranial pressure.” Etiology of intolerance symptoms frequently seen in the critically ill patient may include gut barrier dysfunction associated with higher endotoxin exposure and procalcitonin concentrations.
- ***“Efforts should be made to use the digestive tract early on in the disease.”*** Use of early enteral nutrition may be associated with improved outcomes in critically ill patients, including decreased length of stay, down-regulation of systemic immunity, reduced overall oxidative stress, decreased mortality, reduced risk of infection and shortened duration of mechanical ventilation.
- ***“Choosing nutrients that could maximize the tolerance and absorption of enteral nutrition must be encouraged in the critically ill.”*** Improved gut function is associated with the use of whey protein. Whey protein is recognized to provide antimicrobial activity, immune modulation, improved muscle strength and prevention of cardiovascular disease. Whey protein attributes include the following:
 - ***High branched chain amino acids for tissue growth and repair***
 - ***High cysteine content for conversion to glutathione, a potent antioxidant***
 - ***A fast protein which empties stomach more quickly than whole casein, as it avoids coagulation when combined with gastric acid; reaches jejunum quickly and may promote superior postprandial protein utilization***

Conclusion:

“Support of the gastrointestinal tract is essential for excellent care and better patient outcomes. Early enteral feeding will enhance patient recovery, and the use of enteral diets enriched with whey protein may play a role on gastric emptying, intestinal rehabilitation, recovery from *Clostridium difficile*-associated diarrhea (CDAD) and modulation of oxidative stress.” Abrahão in *Curr Opin Clin Nutr Metab Care 2012: page 483.*