

# **Early Enteral Nutrition with Whey Protein or Casein in Elderly Patients with Acute Ischemic Stroke: A Double-blind Randomized Trial**

José Eduardo de Aguiar-Nascimento MD, PhD; Bruno Regis Prado Silveira, MD;  
Diana Borges Dock-Nascimento RD, MSc

### **Objective:**

This study is a prospective randomized controlled trial of 25 elderly patients (ages 65-90 years) who were admitted to Santa Rosa Hospital in Cuiaba, Brazil with the diagnosis of acute ischemic stroke. The purpose of the study was to investigate the feeding effects on glutathione and inflammatory markers when using an early enteral formula containing whey protein in comparison to an early enteral formula containing casein as the protein source.

### **Materials and Methods:**

Thirty-one elderly adults admitted to the ICU due to ischemic stroke were randomized to receive early enteral nasogastric feeding within 48 hours of admission, of either a hydrolyzed whey protein (WP) enteral formula (PEPTAMEN® 1.5) or an intact\* casein-based (CP) enteral formula (Hiper-Diet Energy Plus) with a casein-based protein modular, providing isonitrogenous and isocaloric nutrition. Goal feeding consisted of 35 kcal/kg/day and 1.2 gm protein/kg/day, based on estimated weight. All study participants had an APACHE score between 8 and 30. Exclusion criteria included change of diagnosis, use of PN, < 3 consecutive days on enteral nutrition, immune suppressive conditions, COPD, renal failure with dialysis or creatinine > 2.5 mg/dL, hepatic dysfunction, cirrhosis or total bilirubin > 3 mg on admission and death in the first 5 days of hospitalization.

Primary endpoints of the study included serum levels of antioxidant glutathione peroxidase (GPx), and inflammatory markers C-reactive protein (CRP) and interleukin-6 (IL-6). Serum albumin, lipids, glucose, mortality and length of ICU stay were also monitored.

### **Results:**

- Twenty-five patients completed the study: 10 in the whey protein group and 15 in the casein group. Six patients were excluded after entry into the study: four had a change in diagnosis and two received less than three days of enteral feeding.
- Age, APACHE score, days on enteral feeding, diagnosis of malnutrition and weight were not statistically different between the groups.
- Mortality and ICU length of stay were not statistically different between the groups.
- **GPx significantly increased in the WP group (presence of glutathione) (p=0.03).**
- **IL-6 significantly decreased in the WP group (marker of inflammation) (p=0.02).**
- **Albumin levels significantly dropped from the first to the fifth feedings days only in the CP group (p<0.01).**
- Improved blood glucose control was noted in the WP group vs CP group with Day 5 findings of 139 mg/dL vs 214 mg/dL, respectively (p=0.17). This finding is clinically significant and would have met statistical significance if the study had been powered for this endpoint.

### **Conclusion:**

- Investigators concluded that individuals who received hydrolyzed whey protein achieved **more clinical benefits** than those who received intact casein. An enteral formula containing whey protein as a nitrogen source may **decrease inflammation** and **increase antioxidant defenses** in elderly patients admitted to the ICU secondary to ischemic stroke.

**\*Note:** While the article stated the casein was hydrolyzed, it was not.  
A request for correction to the publication has been made.

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