1065003 - ORAL WHEY PROTEIN DECREASES PROTEIN BREAKDOWN AND INCREASES PROTEIN BALANCE IN SURGICAL PATIENTS. A STABLE ISOTOPE STUDY

Franco Carli¹, Jennifer Ball², Linda Wykes², Stan Kubow²

1. Anesthesia, McGill University, Montreal, QC, Canada
2. School of Dietetics and Human Nutrition, McGill University, Montreal, QC, Canada

Introduction: We have in the past shown that epidural and intravenous hypocaloric nutrition maintain a positive protein balance after colorectal resection.(1) The present study was set up to measure protein kinetics in patients undergoing colorectal surgery and determine whether oral feeding with whey protein in presence of epidural analgesia has a positive impact on protein balance.

Methods: The study was approved by the Institutional Ethics Board. Patients scheduled for elective colorectal resection and receiving epidural analgesia for 48 h were enrolled in this protein kinetic study. Whole body protein turnover (synthesis, oxidation, breakdown, net balance) was assessed using a 6-h stable isotope tracer technique 7 days before surgery and 2 days after surgery. Following an overnight fast, ¹³C leucine was infused for 2 h (Fasted State) and continued for further 4 h (Fed State) during which patients received either oral glucose (group G) or oral whey protein and glucose (group W+G). The intake of the glucose and whey protein was based on 30% of the daily energy expenditure measured at rest. Blood and breath samples were collected at plateau into the tracer infusion to determine isotopic enrichment (rate of appearance of leucine, net protein breakdown, protein synthesis, leucine oxidation and whole body protein balance), metabolites (glucose, total proteins, albumin) and hormones (insulin, cortisol, glucagon).

Results: Sixteen patients were randomized to the two groups, and of these 3 patients were excluded leaving 13 in total (6 in group G and 7 in group W+G). The preoperative protein kinetics measured during the Fasted State was similar between the two groups. Oral intake of whey protein (Fed State) in group W+G was associated with a significant decrease in protein breakdown either before surgery (from 93±6 to 30±18 μmol/kg/h) or after surgery (from 109±12 to 27±19 μmol/kg/h )(p<0.01), while no significant changes occurred in the G group before (from 97±12 to 80 ±9 μmol/kg/h) and after surgery (115±23 to 109±18 μmol/kg/h) (p>0.05). Postoperative protein balance in group W+G increased from -34±13 to +121±21 mg/kg/h indicating a significant positive change.

Discussion: Feeding with whey protein on the second day after surgery reduces significantly whole body protein breakdown and corrects the negative protein balance associated with surgery. This confirms the nutritional advantages of feeding by the oral route with whey protein.