Serum butyrate concentration in children affected by cow’s milk allergy

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Aims: The short chain fatty acid butyrate has a pivotal role in oral tolerance mechanisms. We aimed to comparatively evaluate butyrate serum concentration in children affected by cow’s milk allergy (CMA) treated with different dietary treatments.

Methods: A venous blood sample was collected after an overnight fast in pediatric patients with IgE-mediated CMA. Children were in stable clinical condition without symptoms of CMA, and receiving from last 6 months a dietary treatment based on: extensively hydrolyzed casein formula containing *L. rhamnosus* GG (group 1); hydrolyzed rice formula (group 2); or soy formula (group 3). Serum butyrate was determined by gas chromatography interfaced to a mass spectrometer.

Results: 28 subjects [85.7% male, mean (SD) age of 24.3 (6.9) months] were enrolled: 10 in group 1, 9 in group 2 and 9 in group 3. Subjects in group 1 showed significantly (p<0.05) higher medium serum concentration of butyrate (0.51 mM) compared with children in group 2 (0.36 mM) or group 3 (0.35 mM). There was no difference in serum concentration of butyrate between group 2 vs group 3.

Discussion & Conclusion: A dietary treatments based on the use of an extensively hydrolyzed casein formula containing *L. rhamnosus* GG is able to increase butyrate serum concentration. This effect could be related to the previous demonstrated effect on oral tolerance acquisition in children with CMA.