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Correspondence

To the Editor,

With great interest, we read the article of Cai et al [1] about oxidative injury and hepatocyte apoptosis in total parenteral nutrition–associated liver dysfunction. The authors performed the study using a newborn rabbit experimental model of parenteral nutrition. I have an important comment because I used a similar model 24 years ago [2]. To investigate the effects of regular insulin on protein catabolism after injury in growing organisms, I constructed the experimental model using weaning rabbits. This animal has a high rate of anabolism because the weight of the newborn rabbit at delivery is 30 to 50 g, and it reaches 250 to 300 g after 15 days. In correspondence, the rabbit milk contains 12% protein, much higher than the human milk that contains 1%. In the pilot plan of the experiment, I concluded that the protein requirement of the newborn rabbit is 15 g/kg per day, higher than that of human newborn (2.5 g/kg per day). However, in the present experiment the authors infused an excessive amount of protein (9.12 g of protein to each animal weighting 80 to 110 g, which corresponds to about 91.2 g/kg per day). It is well known that a nonphysiologic excessive amount of infused protein could be responsible for the liver dysfunction. So, I conclude that the authors should repeat the experience using a more physiological model, with a more adequate infusion of aminoacids.

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References

[1] Cai W, Wu J, Hong L, et al. Oxidative injury and hepatocyte apoptosis in total parenteral nutrition–associated liver dysfunction. J Pediatr Surg 2006;41:1663-8.

[2] Tannuri U, Amaral LA, Maksoud JG. Effect on insulin on protein catabolism after injury in young animals. J Pediatr Surg 1982;17:296-9.

Reply

To the Editor,

I would like to reply to the comments of Dr Tannuri regarding our study on the amino acid dose [1]. I think there is some misunderstanding about the parenteral nutrition formula in our article [1]. Table 1 shows the composition of a 240-mL parenteral nutrition (PN) solution, but the 240-ml PN formula was not infused into just one animal. As shown in Table 1, the 210-kcal PN formula consisted of 8 g lipids, 9.12 g amino acid, and 25.4 dextrose in a 240-mL solution. In our experiment, each rabbit received PN at the energy density of 877 kJ/kg (210 kcal/kg) per day; therefore, every animal received 9.12 g amino acid per kilogram per day. However, we did not mention in the legend that the composition amount was used for each animal per kilogram per day, which might be the reason for the misapprehension.

Our PN formula was mainly taken from studies of Hata et al [2,3], who examined the effects of amino acids on PN-associated cholestasis in newborn rabbits. Actually, the precise nutrition requirement of infant rabbits is unknown. Early study on rabbit milk indicates that the protein requirement of newborn rabbits was about 12 to 16 g/kg per day, which was the amount of amino acids used in the Hata et al studies (12.5-16.7 g/kg per day). Because we used 6- to 8-day-old rabbits (not newborn animals), a lower dose of amino acid was adopted in our study. Moreover, in another study focusing on TPN-associated liver dysfunction in an adult rabbit model, Loff et al [4] gave 4 g amino acid per kilogram per day to 10- to 11-week-old animals.

Sincerely,

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