

## NUTRITION

## Different feeding regimens could affect the development of necrotizing enterocolitis in preterm neonates

Necrotizing enterocolitis (NEC), in which sections of the intestine undergo necrosis, is especially common in preterm neonates. New research in a preterm piglet model of NEC shows that different feeding regimens can induce changes in the gut that could precede the later development of NEC, and provides an insight into the early events of disease progression.

Preterm neonates must, at some point, transition from parenteral to enteral nutrition. This process can be difficult and the type of regimen used could affect the immature gut. “NEC can rapidly progress after starting to feed enterally, especially when using infant formula rather than mother’s milk,” says corresponding author Per Sangild, University of Copenhagen, Denmark. As such, the researchers used preterm piglets that spontaneously develop symptoms of NEC, similar to those in human preterm neonates, to investigate the early effects of different feeding regimens.



Courtesy of P. T. Sangild

56 preterm piglets received total parenteral nutrition for 48 h before switching to enteral feeding with colostrum ( $n = 20$ ) or formula ( $n = 31$ ) for 0, 8, 17 or 34 h; five piglets were sacrificed before the feeding transition to act as a control. Macroscopic NEC lesions were observed in most of the formula group, with marked histopathological changes

(such as necrosis) observed within just 8 h of formula feeding. Moreover, functional changes (decreased digestive enzyme activity) and proinflammatory responses were also observed in this group. By contrast, colostrum feeding induced no histopathological lesions within the study period and upregulated genes involved in development and metabolism in the gut.

“It takes only a few hours ... to induce marked structural and functional defects to the immature small bowel,” notes Sangild, who adds that these defects might be difficult to reverse with later interventions. No consensus yet exists about the optimal way to introduce enteral feeding in preterm neonates.

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