Colostrum stimulates intestinal development in newborn pigs

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The intestine in newborn pigs undergoes rapid tissue growth and functional maturation during the immediate postnatal period (1). Possible factors responsible for such rapid postnatal development include genetic programming, dietary nutrients and/or colostrum-borne bioactive peptides (2). To investigate if native components in porcine colostrum are responsible for therapid intestinal development we compared the intestinal digestive enzyme activities between newborn unsuckled piglets and piglets bottle-fed for three days with either 5% lactosesolution, intact porcine colostrum or porcine colostrum pre-treated with trypsin and chymotrypsin enzymes.

Sixteen newborn unsuckled piglets obtained from four litters of Landrace sows were used in the study. One piglet from each litter was randomly assigned into one of the following four treatment groups: newborn, lactose, colostrum and trypsinized colostrum. Piglets in the newborn group were killed within four hours after birth and piglets in the remaining groups were bottle-fed for three days at three hour intervals with 30 ml/kg body weight of either 5% lactose solution, porcine colostrum or trypsinized porcine colostrum, and the specific activities of lactase, maltase and alkaline phosphatase in the intestinal mucosa were measured.

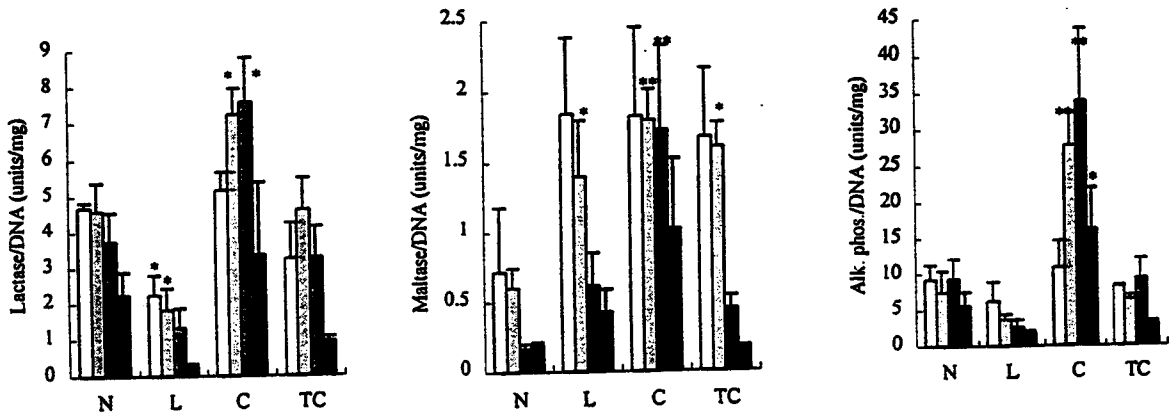

Figure. Specific activities of lactase, maltase and alkaline phosphatase per unit tissue DNA in the small intestinal mucosa. The results indicate that porcine colostrum contains a trypsin-labile component which can stimulate intestinal enzymematuration in newborn pigs. Our findings support the speculation that colostrum-born bioactive peptides play a role in regulating postnatal gut development in the suckling young (2).

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2. Xu RJ. Development of the newborn GI tract and its relation to colostrum/milk intake: a review. Reprod Fertil Dev 1996;8:35-48.