

Fosfomycin residues in colostrum: Impact on morpho-physiology of suckling piglets

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Introduction/Objective

Ingestion of colostrum containing antimicrobial residues can alter the proper development of piglet's intestine, causing morpho-physiological changes which would negatively impact on its future productive life. Irrational use of antibiotics can bring about imbalance on microbiota diversity causing diarrhea and even death. The aim of this study was to determine the effects of fosfomycin residues found in colostrum on intestinal morpho-physiology and microbiota of suckling piglets.

Materials and Methods

Farrow was induced in 18 sows at 114 days of gestation. 9 received 15 mg/Kg BW disodium fosfomycin (Fosbac®, Bedson S.A., Argentina) via IM; and 9 were used as control. Piglets were monitored during the first 24 hs of life at maternity room (PPS, Pro Surveillance System®). Colostrum production and intake were calculated using the equation developed by Devillers *et al.* (2007). 8 piglets were selected at random from treated sows and divided into 2 groups: A: euthanasia was done after 12 hs of lactation and B: euthanasia was done after 24 hs of lactation. Likewise 8 piglets were selected from control sows and divided into groups C and D where euthanasia took place at 12 and 24 hs respectively. Intestine samples were collected to determine bacteriology (CFU *Lactobacillus* and *Enterobacteria*) and histology (absorption surface area). For statistical analysis software PROC MIXED and GLM del SAS V9.3 was used.

Results

Colostrum/milk production by the sows and its intake by the litter were 2921 and 294.2 mL accordingly. Fosfomycin average ingestion per piglet was 0.27 mg/Kg BW. No significant interactions between *Enterobacteria* were observed for the different groups ($p>0.05$). Bacterial count for *Lactobacillus* was greater at 24 hs than at 12 hs (7.55 ± 0.19 y 6.64 ± 0.3 respectively). No significant interactions between groups were detected by histological studies ($p>0.05$). Measured absorption surface areas were between 10.30 and 6.30 μm^2 in all groups.

Discussion and Conclusions

Results show that ingestion of colostrum containing fosfomycin residues would not have an impact on intestinal microbiota balance of neonatal piglets. This can be explained by physico-chemical properties of this antibiotic and its low distribution to mammary fluids. Therefore fosfomycin can be considered to be safe for treatment of gestating sows during farrowing and lactation.

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