INTERNATIONAL JOURNAL OF HEALTH & ANIMAL SCIENCE FOOD SAFETY

UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI SCIENZE VETERINARIE PER LA SALUTE, LA PRODUZIONE ANIMALE E LA SICUREZZA ALIMENTARE

Keywords

Piglets, Laurate, Weaning, Antibiotics, Gut Health.

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The saponification of Lauric acid with calcium soaps as an alternative to in-feed antibiotics in post-weaning piglets.

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In the search for the reduction of antibiotics in farm animals, it has been observed in piglets that medium-chain fatty acids (MCFA) with 6-12 atoms, exhibit an antimicrobic activity in particular against Gram+ bacteria, at relatively high concentrations. However, MCFA, can be hardly used as such because of their repellent odour and taste and for their rapid absorption in upper gastrointestinal tract (GIT). These problems could be overcome by the generation of monoacylglycerol, but esterification is usually carried out on a silica base, which reduces the concentration of FA, therefore limiting the antibacterial effects. Our hypothesis is that the saponification with calcium salts might positively affect MCFA concentration in the upper gastrointestinal tract. The aim of the present study was to examine the effects of laurate calcium soap (C12-Ca soap) on growth performance and health status of post-weaning piglets. At weaning, 192 crossbreed Topics piglets were assigned to 3 experimental groups consisting of 16 replicates (4 pigs/pen each): CTR (negative control), T1 (basal diet plus amoxycillin at 400 mg/kg), and T2 (basal diet plus C12-Ca soap at 1 kg/ton). The basal diet, divided into pre-starter (administered from 0 to 14 days) and starter (administered from 15 to 42 days), was based on barley meal, maize meal and soybean meal. Body weight, average daily gain and feed consumption did not differ among groups. Feed efficiency was higher in T1 (0.61) and T2 (0.58) than in CTR (0.51) in the overall period ($P < 0.01$) but also between 0-14 days and between 29-41 days (Table 1). No mortality was observed in T1, while in T2 was 4,7% and in CTR was 10,9% (values calculated on 10 total dead animals). These preliminary results suggest that saponification of MCFA may be a valuable alternative to in-feed antibiotics, used for growth promotion, and for enhancing health in post-weaning piglets.

ISSN: 2283-3927

Table 1: Feed efficiency of piglets fed basal diet without additive (CTR), with basal diet plus amoxycillin (T2) and basal diet plus laurate calcium soap (T2). Feed efficiency was divided in different period: from 0 to 14 days, from 15 to 28 days, from 29 to 41 days and for the entire period of the trial. The results show that feed efficiency was higher in T2 and T1 groups than in CTR group.

					p-value		
	CTR	**T1**	**T2**	**SEM**	**treat**	**time**	**treat*time**
Feed Efficiency							
0-14 d	$0,64^{B}$	$0,73^{A}$	$0,65^{B}$	20,00	0,0134	<,0001	0,034
15-28 d	0,57	0,58	0,62				
29-41 d	$0,53^{b}$	$0,59^{a}$	$0,53^{b}$				
Overall	$0,51^{B}$	$0,61^{A}$	$0,58^{A}$	12,645	<.0001		

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 ISSN: 2283-3927