



The impact of dietary diformates in zinc oxide reduced piglet diets - a review

Christian Lückstädt

ADDCON GmbH, 06749 Bitterfeld-Wolfen, Germany;
christian.lueckstaedt@addcon.com

Introduction:

Zinc oxide has been widely used since the 1980's at pharmacological concentrations in feeds to control post-weaning diarrhoea (PWD) in piglets caused by *E. coli* F4 infections. However, European authorities reduced the maximal Zn concentration authorized in pig diets since 2022, so alternative strategies and/or additives to manage PWD are needed. Certain acidifiers used commonly in feeds for gut health purposes may be considered as an effective alternative.

This study gives an overview of the use of dietary potassium diformate or sodium diformate (Formi / Formi NDF, ADDCON) in zinc-oxide reduced piglet diets.



Materials and methods:

Data from published trials that included diformates in diets for post-weaning piglets were collected from the literature. The final dataset contains the results of 10 documented trials with diformate (inclusion rates ranging from 10 to 18 kg/t) and low levels of ZnO (average 100 ppm). These studies were carried out under both commercial and institutional conditions and included more than 1068 post-weaning piglets. The dataset was subjected to a meta-analysis, covering the effects of diformates on diarrhoea percentage and feed efficiency. A $P < 0.05$ value was considered significant.

Results:

Diarrhoea percentage in the whole dataset in post-weaning piglets fed with diets containing low ZnO-levels was significantly ($P = 0.023$) influenced by the inclusion of dietary diformates. The diarrhoea percentage was reduced by more than 61% from 4.8% in the ZnO-fed piglets to only 1.8% (Table 1) in the diformate-fed piglets. Furthermore, feed efficiency was highly significantly ($P < 0.0001$) improved by 4.8% (FCR with ZnO: 1.55; with diformate: 1.47) in piglets fed with diformate – either Formi or Formi NDF.

Table 1: Average impact (Meta-analysis of 10 trials) of dietary diformate and reduced ZnO-levels on feed efficiency and diarrhoea percentage in weaned piglets

	Low ZnO inclusion	Dietary diformate	Difference (%)
Diarrhoea percentage [%]	4.8±3.6 ^a	1.8±1.9 ^b	-61.6
Feed conversion ratio [g/g]	1.55±0.09 ^A	1.47±0.09 ^B	-4.8

^{a,b} Different superscripts within a row indicate a significant difference ($P < 0.05$)

^{A,B} Different capital superscripts within a row indicate evidence for highly significant difference ($P < 0.0001$)

This is in full agreement with the findings of a previous holo-analysis of 59 pig trials with potassium diformate inclusion, which had on average a significantly improved FCR by 4.2% against negative controls.

Conclusion:

In the context of the above data, the acidifiers Formi (potassium diformate) or Formi NDF (sodium diformate) can play a vital part in zinc oxide reduction strategies and may further help in improving feed efficiency in post weaning piglet production - thus playing an important part in worldwide sustainable pig production approaches.