

## AN OBSERVATION ON THE EFFECT OF TOLTRAZURIL, AN ANTICOCIDIAL DRUG, IN SUCKLING PIGLETS

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### SUMMARY

A single dose of approximately 30 mg/kg bodyweight toltrazuril was administered to four-day-old suckling pigs from five litters in a farm. There was a significant increase in mean body weight of 0.56 kg at 21 days of age, a lower preweaning mortality of 1.7% and significantly improved faecal scores in comparison with controls.

Keywords: Toltrazuril, suckling piglets, anticoccidial drug.

The significance of coccidial infection in pigs is not known in Malaysia. However many reports from Denmark, Venezuela and Netherlands have determined that *Isospora suis* infection is an important cause of diarrhoea in suckling pigs with an onset of about 1-2 weeks post partum but with low mortality (Boulanger, *et al.*, 1994; Eysker *et al.*, 1994; Kim, *et al.*, 1988; Madsen, *et al.*, 1994). The diarrhoea is characterised by a non haemorrhagic profuse watery diarrhoea with dehydration, depression of growth and does not respond to antimicrobial therapy. It has been reported (Eysker, *et al.*, 1994) that different drugs such as sulphonamides, pyrimethamine and amprolium have been evaluated with variable results and involved repeated cumbersome administration to piglets. A single dose administration of toltrazuril (20 mg/kg) at ages 3 to 8 days have been shown to be effective against coccidiosis in piglets (Boulanger, *et al.*, 1994; Eysker *et al.*, 1994; Kim, *et al.*, 1988; Madsen, *et al.*, 1994; Driesen, *et al.*, 1995). Toltrazuril, a synthetic triazinone, acts upon all intracellular stages in the schizogony and gametogony of coccidia through interference with nuclear division and mitochondrial activity and swelling of the endoplasmic reticulum. Toltrazuril has been shown to be effective against mammalian intestinal coccidial infections including *Eimeria*, *Isospora*, *Sarcocystis*, *Toxoplasma* and *Hepatozoon* except *Cryptosporidium*, and does not possess significant antibacterial effects (Haberkohn and Mundt, 1989). In this study, a trial was conducted to determine whether a metaphylactic administration of 30 mg toltrazuril/kg body weight in 4-day-old piglets could elucidate whether coccidiosis may be an unseen disease entity in pig farms in Malaysia.

The trial was conducted in a 350 sow farrow-to-finish farm. A total of ten sows due to farrow of parities between 2 to 5, were randomly allotted into treatment

piglets in the treatment group were given an oral dose of 30 mg/kg toltrazuril (Baycox 5% Vet suspension). The control piglets were not treated with any placebo on day 4 of the experiment. The litters were weighed at day old and 21 days of age. Faecal and diarrhoeal scores (Eysker *et al.*, 1994; Madsen *et al.*, 1994) were recorded at 7, 14 and 21 days of age. A faecal score was defined as follows: 1 = pellet well formed faeces and 2 = soft faeces, whereas the diarrhoeal score was defined as: 0 = no piglet observed with diarrhoea, 1 = one pig with diarrhoea and 2 = more than one pig with diarrhoea. The data were subjected to t-test statistical analysis.

The results are presented in Table 1. The 21-day litter weights showed a significantly heavier 0.56 kg per piglet ( $P < 0.05$ ) but a non significant lowered preweaning mortality of 1.7% in favour of toltrazuril treated piglets. Similarly the faecal scores and diarrhoeal scores of toltrazuril treated piglets showed significantly ( $P < 0.01$ ) better scores except for day-7 faecal score. A single administration of 30 mg/kg bodyweight of toltrazuril was found to have a positive effect on liveweight, lowered preweaning mortality and improved faecal and diarrhoeal scores.

In this study, there was no effort taken to observe for the presence of coccidial oocysts in the faeces or in intestinal scrapings of suckling pigs. It is possible that this finding indicates that coccidial infection may be an unrecognised production related disease. Various authors (Boulanger, *et al.*, 1994; Eysker *et al.*, 1994; Kim, *et al.*, 1988; Madsen, *et al.*, 1994; Driesen, *et al.*, 1995) reported that in addition to the reduction in the severity of diarrhoea and the number of piglets affected per litter, oocysts excretion as well as the number of antibacterial treatments given post toltrazuril treatment were significantly reduced. The detection of *I. suis* in piglets with diarrhoea was reduced from 84% in the

(Driesen et al., 1995). The findings in this study suggest that coccidial infection may be present and undiagnosed in piglets in Malaysia and thus warrants a more detail study in pig farms in Malaysia.

**Table 1.** Effect of toltrazuril in suckling pigs

Group	Control	Treatment
Number of sows	5	5
Birth weight, kg	1.33	1.33
21-day weight, kg	3.64 <sup>a</sup>	4.20 <sup>b</sup>
No. of piglets - Day 0	37	44
No. of piglets - Day 21	33	40
Prewaning mortality, %	10.8	9.1
Faecal score		
7- days	1.56	1.36 <sup>d</sup>
14-days	1.68 <sup>c</sup>	1.24 <sup>d</sup>
21-days	1.76 <sup>c</sup>	1.24 <sup>d</sup>
Diarrhoea score		
7-days	2.0 <sup>c</sup>	1.0 <sup>d</sup>
14-days	1.6 <sup>c</sup>	0.6 <sup>d</sup>
21-days	1.6 <sup>c</sup>	1.0 <sup>d</sup>

<sup>a,b</sup> Row bearing different superscripts are significantly different ( $P < 0.05$ )

<sup>c,d</sup> Row bearing different superscripts are significantly different ( $P < 0.01$ )

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## RINGKASAN

### CERAPAN TERHADAP KESAN TOLTRAZURIL, SUATU DRUG ANTIOKSIDA, DALAM ANAK BABI MENYUSU

Suatu dos tunggal toltrazuril lebih kurang 30 mg/kg berat badan telah diberi kepada anak babi menyusu umur 4 hari daripada 5 seperanak dalam sebuah ladang. Apa yang didapati ialah peningkatan berat badan tererti sejumlah 0.56 kg pada umur 21 hari, kematian prapenyapihan lebih rendah pada kadar 1.7% dan skor tinja tererti lebih baik berbanding kawalan.