



# Efficacy of Oral Toltrazuril in Newborn Piglet

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**Abstract:** Drug in piglets has a protective effect against dysentery. The aims of this study were determined the efficacy of toltrazuril in newborn-piglets. In 2 piglets of 819 piglets were divided into 2 groups. Baycox® drug group, using 446 piglets. Zurilguard® drug by using 373 piglets by adding a dose of toltrazuril antibiotic 1 ml. by oral suspension. It was found that the weaned weight of the Baycox® and Zurilguard® was found no significant difference ( $P > 0.05$ ). The percentage of farrowing crate damage for the Baycox® of drugs had 10.23 % (39/407). In Zurilguard®, there was a percentage of farrowing crate damage at 3.18 % (14/359). As a result, percentages of farrowing crate damage were significantly different in both groups ( $P < 0.05$ ). Efficacy from FCS indicated that Baycox® was more effective at returning piglets to diarrhea FCS 3 in newborn-piglets 39.24% (175/446) pigs at 7 day 43.64% (182/417) pigs at 14 day 24.27 % (100/412) weaned 25.80% (105/407). FCS indicated that Zurilguard® was more effective at returning piglets to FCS-3. In newborn-piglets 33.51% (125/373) piglets 7 days 37.82% (138/366) at piglets 14 days 58.96 % (214/363) weaned 42.82% (153/359). Zurilguard® had a lower rate of returning of FCS-3 in newborn-piglets and pig at 7 day than the Baycox® but rate of return of FCS-3 in pig at 14 day and weaned pigs more than Baycox®. In conclusion of oral toltrazuril that found efficacy of Zurilguard® for mortality rate of newborn-piglets to weaning in 21 days more than Baycox®.

**Keywords:** Antibiotic, Baycox®, Toltrazuril, Zurilguard®

## Citation:

Saracharoen, P.; Somrup, S.; Efficacy of Oral Toltrazuril in New born Piglets. *ASEAN J. Sci. Tech. Report.* 2022, 25(1), 36-40. <https://doi.org/10.55164/ajstr.v25i1.244250>.

## Article history:

Received: May 27, 2021

Revused: December 22, 2021

Accepted: December 22, 2021

Available online: March 3, 2022

## Publisher's Note:

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## 1. Introduction

The most common problem in piglets after birth is diarrhoea. This occurs for many reasons, such as diarrhoea from *Escherichia coli* (*E. coli*) diarrhoea, infectious disease in piglets known as "PED" This causes a wide range of losses, starting from mortality, scraping, stunting, shedding, and causing ongoing problems to nursery and finishing pigs. It makes it easy to get infected and get sick with respiratory issues. There is a mortality rate and scrapped higher than Effective normal growth and lower food efficiency. Use more time to sell until the party is sold. There is a higher cost of production. The result is Farm owners have decreased profits. [1-2] Swine dysentery is caused by a protozoan virus called *Isospora suis*, which causes the small intestine wall cells to be destroyed or damaged. All economic animals, Including wild animals, can become infected. The prevalence of the disease will be higher when a bird or mammal comes together. The oocyte of dysentery is resistant to the environment. They can stay outside for months and are difficult to destroy with disinfectants. Which makes

it difficult to control. The severity of the disease depends on the strain of coccidiosis.[3] The type of animals involved, symptoms. They range from asymptomatic infection to severe intestinal infection. Some piglets die due to infection. It harmed production efficiency. Therefore, it is the reason for the efforts to find a preventive measure. The control of dysentery in pigs is a drug application program to cover the problem period (metaphylactic program) and treatment program. [1] The purpose of this study is to study the efficacy of Toltrazuril in newborn piglets between the Baycox® and Zurilguard® for controlling diarrhoea in the piglet.

## 2. Materials and Methods

Animals used in the study, Two piglets group, were tested for a total of 819 piglets. The experiments were divided into 2 groups and the piglets were weighed. It is divided into 4 age periods: first 7 days of delivery, 14 days, and weaning. Group 1: Baycox® 446 Baycox® feeders were administered to piglets in a volume of 1 millilitre one day after the birth of piglets. Group 2: Zurilguard® 373 Zurilguard® feeders were administered to piglets in a dose of 1 millilitre one day after the birth of piglets. Record of experimental results, mean first stillbirth (number of piglet/ sow), represent live birth (number of piglet/sow), mean piglet weight Percentage of maternity damage and average piglet ADG (gram). Animal license approval code U1-01120-2558.

With the following calculation methods

1. Average newborn (number of piglet/ sow)

$$= \frac{\text{number of firstborn}}{\text{Number of sows}}$$

2. Average piglet (number of piglet/ sow)

$$= \frac{\text{Piglets live}}{\text{Number of sows}}$$

3. Piglet average weight

$$= \frac{\text{Piglet weight}}{\text{Number of piglets}}$$

4. Percentage damaged in maternity envelope

$$= \frac{\text{Damaged maternity envelope}}{\text{Number of piglets weaned}}$$

5. ADG Average piglet (gram)

$$= \frac{\text{Mean weaned piglet} - \text{average first stillborn piglet weight}}{\text{Weaning age}} \times 100$$

Statistical analysis of data

The 819 piglets were collected in two groups: 446 Baycox® piglets. The experimental group of 373 Zurilguard® were evaluated for Fecal consistency score at 7-day birth, 14-day age and weaning. According to the symptoms of diarrhoea, as follows Fecal consistency score chart. The statistical variance was analyzed and compared the mean differences between the groups using the Independent-Samples T-Test is used by SPSS.

## 3. Results and Discussion

A study comparing Toltrazuril in two species of newborn piglets, newborn piglets total 819 using Baycox® and Zurilguard®. The experiment was classified into two groups: Group 1, Baycox®, Total newborn piglets are 446, Total piglets are 40. Testing by filling up Baycox® in newborn piglets by oral suspension 1 millilitre after the piglets were born 1 day. Group 2, Zurilguard® Total newborn piglets are 373, Total piglets are 34 testing by filling up Zurilguard® in newborn piglets by mouth 1 millilitre after the piglets were born 1 day of 373 Zurilguard® drugs, a total of 34 sows after the piglet was born 1 day.

The result found that both the sampling group of medicine group 1 and group 2 affected the weight of piglets until growing to a weaning state. That found no difference in statistical significance ( $P > 0.05$ )

**Table 1.** Growth efficiency of newborn piglets to weaning in 21 days.

Data	Newborn piglets group		p-value
	Baycox®	Zurilguard®	
Number of piglets alive (piglets)	446	373	-
Birth weight (kg)	1.65 ± 0.33	1.60 ± 0.22	0.15
Weight 7 days aging (kg)	2.95 ± .053	3.30 ± 0.60	0.23
Weight 14 days aging (kg)	4.99 ± 1.09	3.42 ± 0.92	0.10
Weaning weight (kg)	7.14 ± 1.11	5.84 ± 1.06	0.83
ADG (gram)	261.62 ± 52.89	202.58 ± 48.15	0.55
Number of piglets weaned (piglets)	407	395	-

Note: Group 1; Baycox®, Group 2; Zurilguard®.

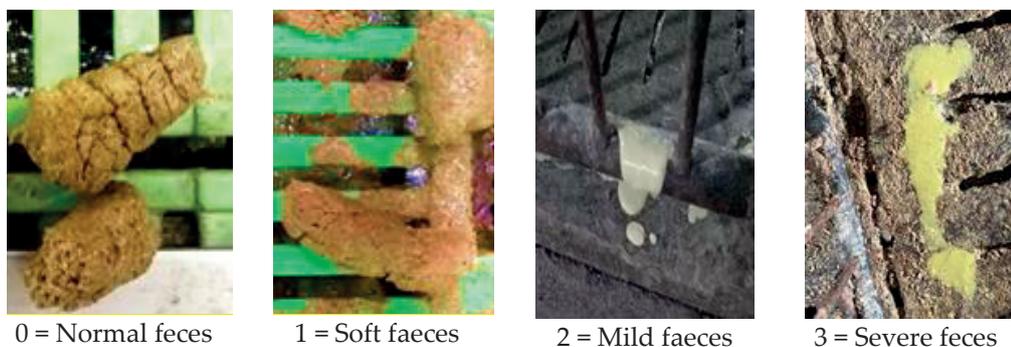
**Table 2.** The mortality rate of newborn piglets to weaning in 21 days.

Data	Newborn piglets group		p-value
	Baycox®	Zurilguard®	
Number of piglets alive (piglets)	446	373	-
7 days old death (percent)	0.70 ± 0.94 <sup>a</sup>	0.21 ± 0.48 <sup>b</sup>	0.00
14 days old death (percent)	0.13 ± 0.40	0.09 ± 0.29	0.27
Weaning death (percent)	0.13 ± 0.33	0.12 ± 0.33	0.85
Weaning age (days)	21	21	-
Number of piglets weaned (piglets)	407	359	-
Number of piglets weaned (piglets)	39	14	-
Damaged maternity envelope			
(body)Percentage damaged in maternity envelope	10.23 ± 17.19 <sup>a</sup>	3.18 ± 5.18 <sup>b</sup>	0.02

Note: Group 1; Baycox®, Group 2; Zurilguard®.

<sup>a, b</sup>: different in statistical significance ( $P < 0.05$ )

The result was found that birth rate damage of using Baycox® has shown the rate as 10.23% (39/407) and the case of Zurilguard® has shown the birth rate's damage as 3.18% (14/359). Both experimental groups are different in statistical significance ( $P < 0.05$ ).

**Figure 1.** Faecal consistency score [4]

**Table 3.** Faecal consistency score (FCS) in the piglet.

Age of piglet	Number of piglet	Present of diarrhea	FCS 0	FCS 1	FCS 2	FCS 3
<b>Baycox®</b>						
First birth	446	59.87	-	40.13	20.65	39.22
7 days	417	43.64	-	29.91	26.45	43.64
14 days	412	24.27	49.52	26.21	-	24.27
weaning	407	25.80	64.86	9.34	-	25.80
<b>Zurilguard®</b>						
First birth	373	47.72	-	52.28	14.21	33.51
7 days	366	57.38	7.65	34.97	19.56	37.82
14 days	363	67.77	23.69	8.54	8.86	58.96
weaning	359	42.62	27.30	30.08	-	42.62

Toltrazuril was studied in premature piglets between Baycox ® and Zurilguard ® from stillbirth to weaning piglets. Has resulted in piglets after adding the drug, there is no rate of coccidiosis. Having a lower incidence of diarrhoea is consistent with Pipat et al. [5]. It was reported that the filling of Toltrazuril in the stillborn piglets was as a medicine filling to prevent dysentery (*Isospora suis*) and reduce the diarrhoea rate in piglets. The filling of the drug effectively prevented coccidiosis and piglets with diarrhoea.

#### 4. Conclusions

The efficiency of Baycox ® helps the piglets have got better from diarrhoea. The piglet sampling group has gotten diarrhoea before filling up Baycox®, counted as 59.87%. After filling up Baycox® for 7 days until weaning, the piglets have acquired diarrhoea, counted as 31.24%. The piglets have not got diarrhoea as 68.76%. The piglets have died from being laid on by other piglets counted as 5 piglets. The piglets have been weak, small and have a flatulence total of 34 piglets calculated as 10.23%. The efficiency of Zurilguard® has very well benefits on growth and the rate of death from diarrhoea in the piglet group. The piglet sampling group has gotten diarrhoea before filling up Zurilguard®, counted as 47.72%. After filling up Zurilguard® for 7 days until weaning, the piglet has acquired diarrhoea, counted as 55.92%. The piglet has not got diarrhoea calculated as 44.08% and the piglet has died from being laid on from other piglets counted as 4 piglets. The piglets have been weak, small and have a flatulence total of 10 piglets counted as 3.18%. However, protocols of metaphylactic treatment with 5% toltrazuril (15 mg/kg) in naturally infected, extensively reared beef calves from birth to 1 year of age. It found fewer oocysts were excreted in the treated group for up to 75 days and at 150 days of age ( $p < 0.05$ ). In the final stage of the study, significant differences. [6] Zurilguard® can treat and control *Isospora suis* in newborn piglets [7] while Baycox ® against neonatal *Isospora suis*-coccidiosis in synchronous piglets. However, Baycox 5% Suspension is indicated for use against neonatal *Isospora suis*-coccidiosis in piglets product by Bayer. The recommended dosage of toltrazuril is 20 mg per kg. [8] But Zurilguard® product by Pharmatech, there are different brands. In subsequent studies, faeces should be examined to confirm the presence of parasite eggs in the laboratory and the health assessment of pigs in other systems.

#### 5. Acknowledgements

Thank you to Farmers Southern for financial support.

**Author Contributions:****Funding:****Conflicts of Interest:****References**

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