



# Application report

**Product:**  
Penergetic-t

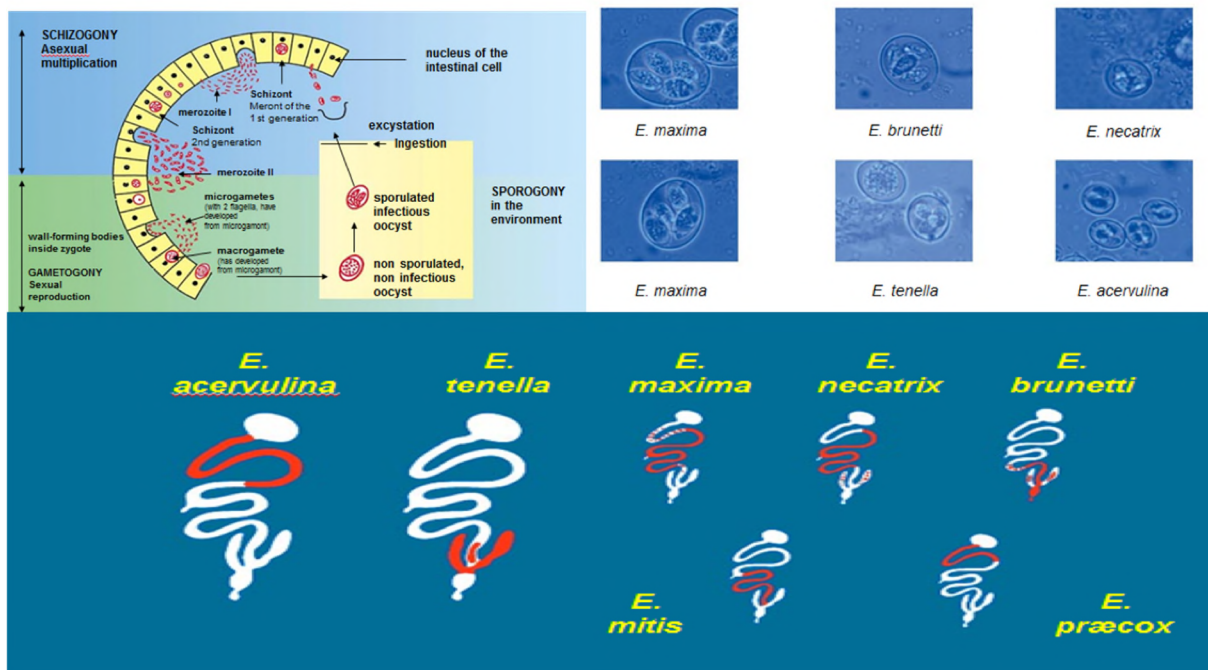
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**Date:**  
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## Efficacy of Supplementary Penergetic T poultry on Production Performance, Oocyst Quantity and Intestinal Morphology of Broilers Infected with Coccidia

### Coccidiosis



### Research Background

An anti-coccidial agent is usually supplemented in the diet for broiler chickens, especially during the beginning until a week before slaughtering age, in order to control and prevent. Consequently, it resulted in drug residues in body and products of the broiler chickens, then affecting to consumer health. This would lead to unacceptable products of consumers both



national and international levels, especially European Union (EU) which is highly strict for importing chicken products by allowing only the products without drug residues.

## Materials and Experimental Methods

### Study design:

Experimental study by the use of CRD (Completely Randomized Design).

### Study location:

Chicken experimental barn and Diagnostic center of Faculty of Veterinary Medicine, Mahanakorn University of Technology.



### Experimental animals:

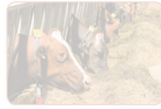
156 broiler chickens (Cobb breed), mixed sex.

144 chicks for 3 experimental groups (equally 48 chicks per groups at the start), chicks in each group will be housed in 4 replications (cages) with 12 chicks of each.

12 chicks will be housed in a cage and used as negative control (non-inoculated group).

Chickens in each group will be offered dietary treatment (at 1 day old) as per the following:

Group	Anti-coccidiosis	N=156	Coccidiosis
1. Negative control		1 rep x 12	N/A
2. Positive control		4 rep x 12	Shed
3. Monensin	Monensin 500 g per ton feed	4 rep x 12	Shed
4. Penergetic	Penergetic 260 g per ton feed	4 rep x 12	Shed



**Infected E.tenella 30,000 oocysts / bird.**

**Statistical analysis:**

- ADFI, ADG, FCR
- Oocyst count by McMaster technique
- Villus height: Crypt depth ratio (Jejunum & Cecum)

ANOVA with repeated measurements.

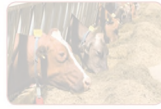
- Lesion score (cecum) by Johnson and Reid methods
- Kruskal-Wallis methods.

**Measurements and Sampling Times**

Performance Index	
Feed intake	Daily (calculated as week basis)
Average daily gain (ADG)	Weekly
Feed conversion ratio (FCR)	Weekly
Feed cost per BW gain (FCG)	Weekly
Laboratory Tests	
Intestine and caecal samples:	Five times (0, 7, 9, 14, 21 and 28 post challenge), 4 chicks from each group (1 chick from non-challenged group) at each collecting time (except for 9 day post challenge).
• Gross lesion score and histopathological lesion at caecum	
• Villus height: crypt depth ratio at jejunum	
• Coccidial oocysts per gram in caecal contents (+ content weight)	
• Clostridium spp. (found / not found in caecal contents)	
ND titer	
Coccidial oocyst per gram in feces (+ feces weight)	Day 5, 6, 7, 8, 9 and 14 after challenge.

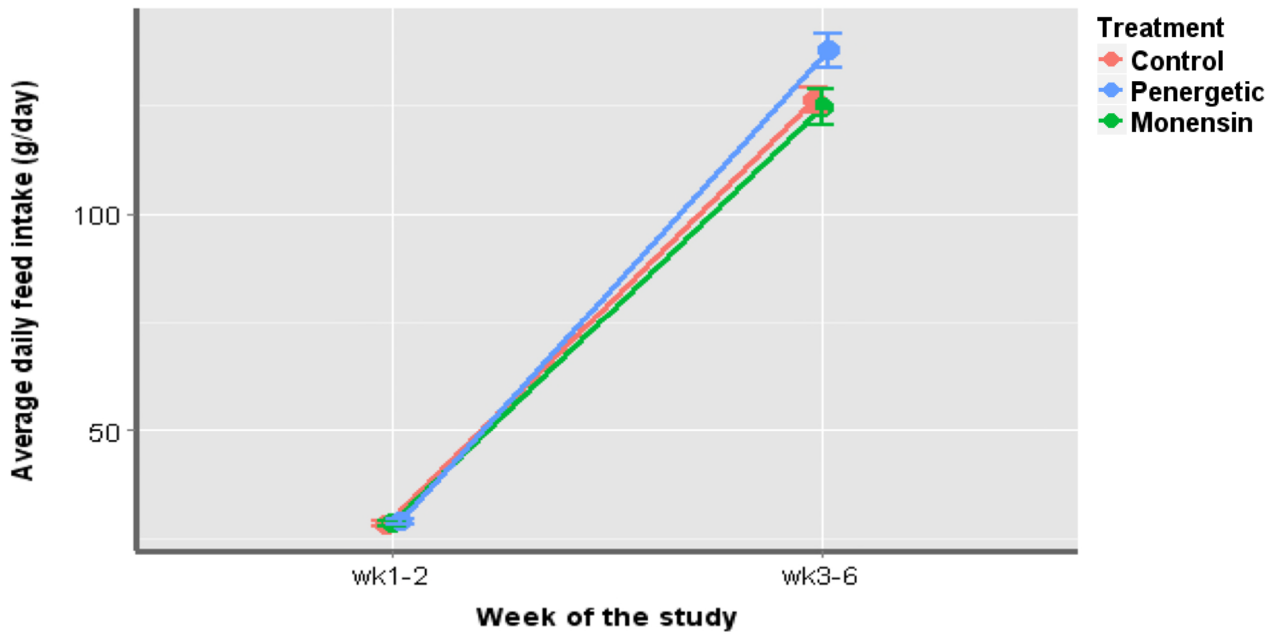
**Trial Results**

- Growth performance
- Lesion score & Caecal oocysts
- Intestinal morphology

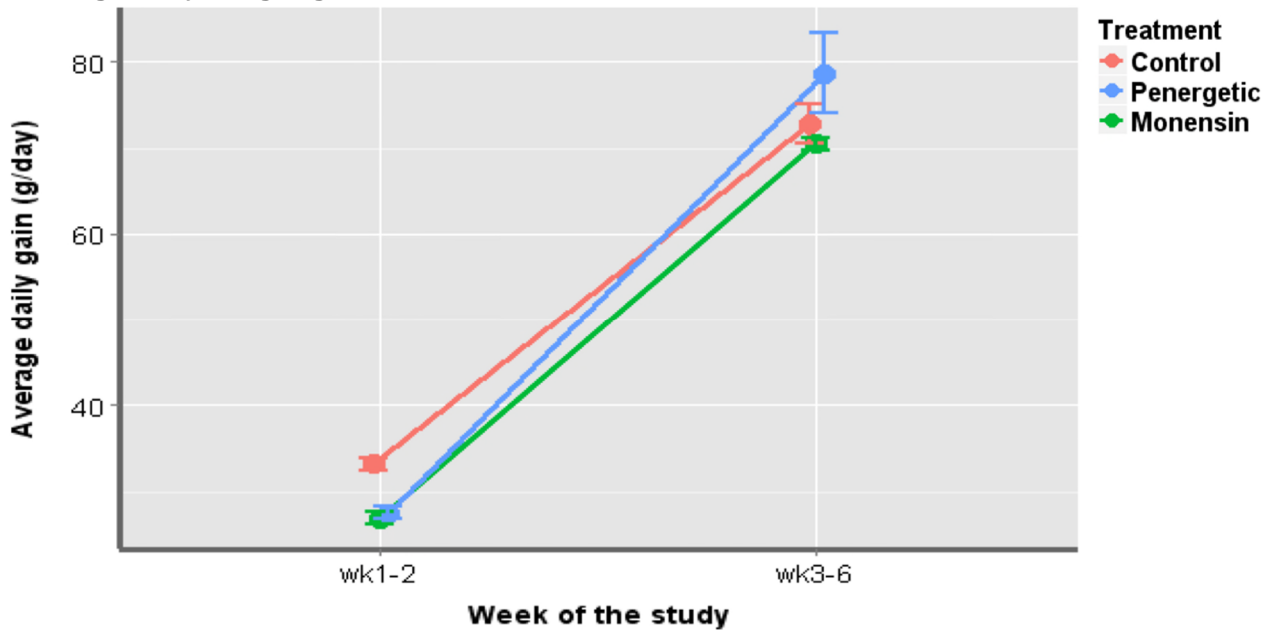


## Growth Performance

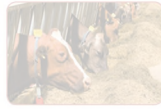
### Average daily feed intake



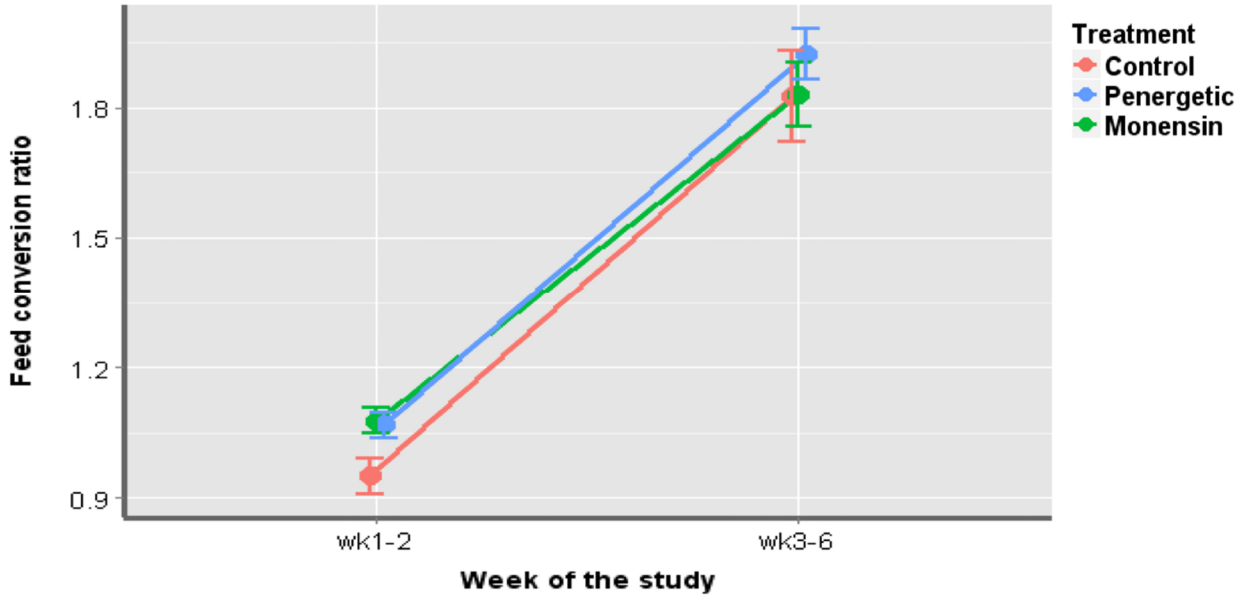
### Average daily weight gain





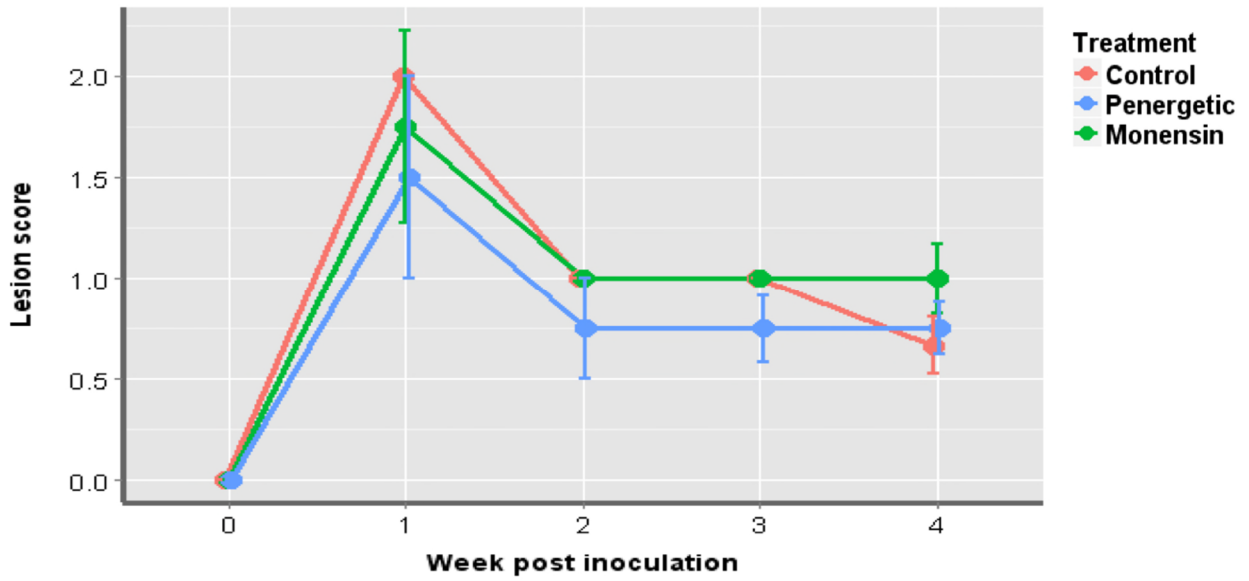


### Feed conversion ratio

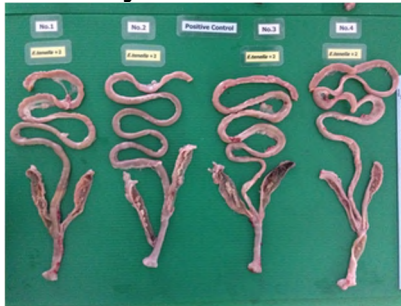


### Lesion Score & Caecal Oocysts

#### Lesion score



### Summary



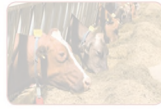
Positive group



Monensin group

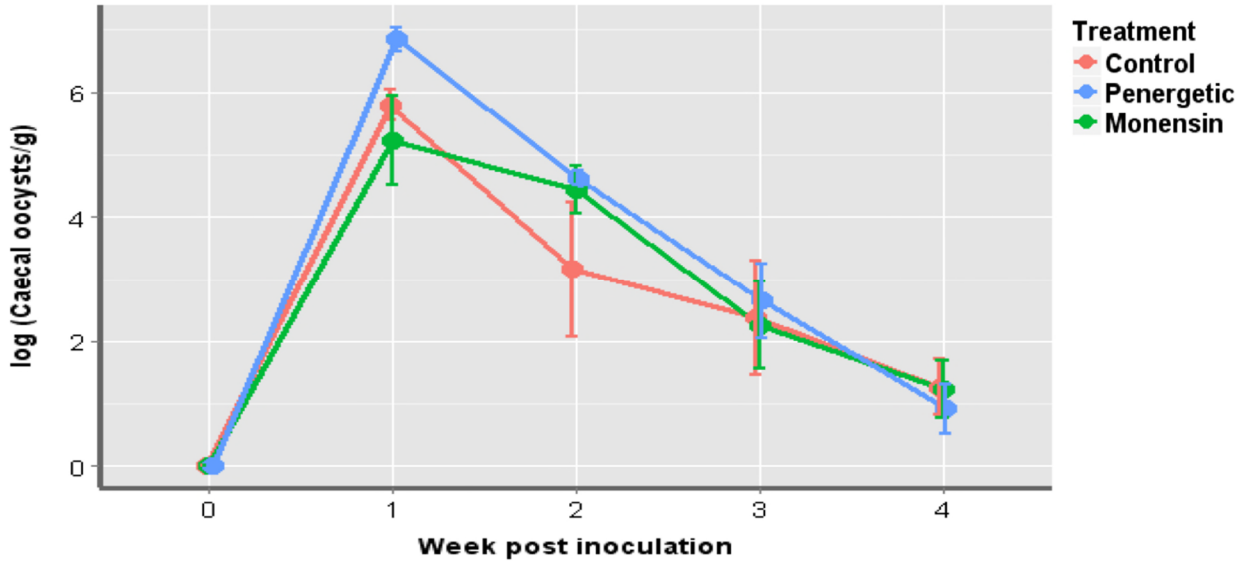


Penergetic group



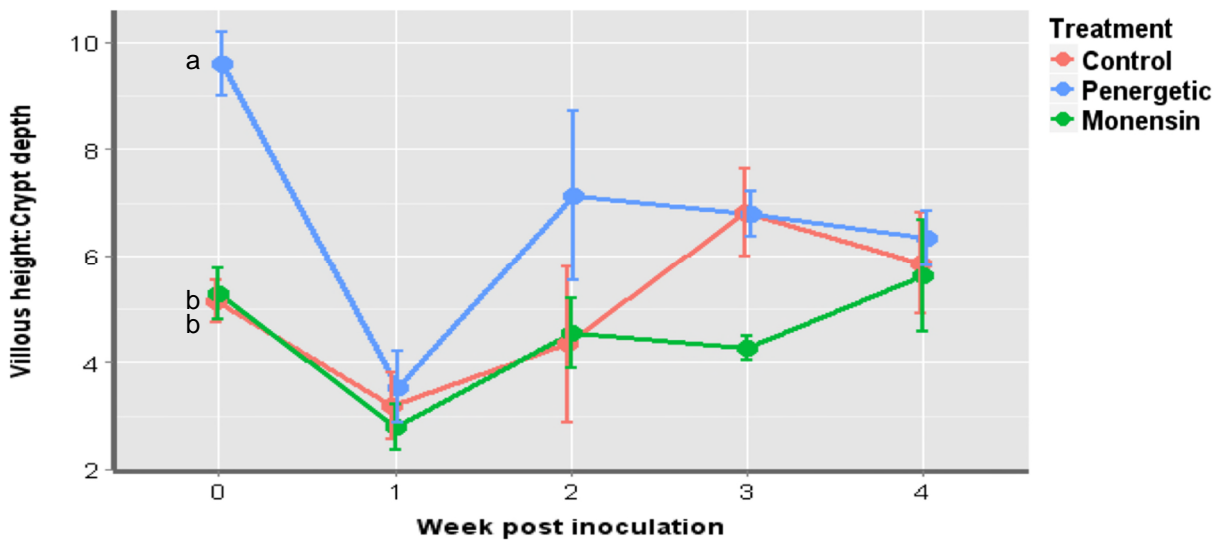
Positive group: Lesion score have +2  
 Monensin group: Lesion score have +1-+3  
 Penergetic group: Lesion score have +1-+3

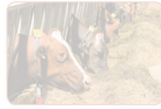
### Caecal oocysts



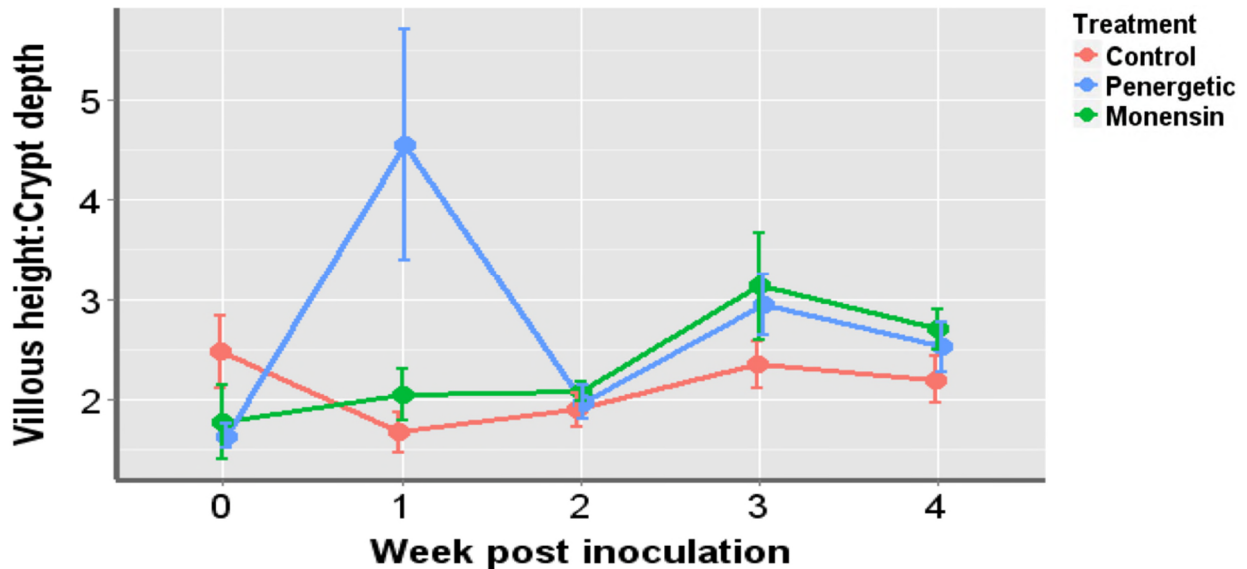
### Intestinal Morphology

#### Jejunum > Villous height: Crypt depth





### Cecum > Villous height: Crypt depth



### Discussion

From the results of the current study, the growth rate and feed conversion ratio of the chickens fed diets containing Monensin and penergetic t poultry may suffer consequences of the coccidiosis with resulting anorexia and consequently lower growth rate (Bartov, 1994) at the wk 1-2 of the chicken age.

These would be explained by higher caecal VH:CD of the chickens obtained the penergetic t poultry, indicating lower damages of caecal VH:CD at 1 week post inoculation which is the most severe of coccidia infection (highest value of caecal lesion score and quantities of caecal oocysts). These is in agreement with earlier study (Silva et al., 2009) reporting that the ratio of VH:CD is an important indicator for nutrient absorption.

### Conclusion

Supplementation of the penergetic t poultry in diet for broiler chickens at 250 ppm would lower damage of caecal villi at 1 week after coccidia infection, but no effects on caecal lesion score, quantities of oocysts in caecum and Newcastle disease titer.