



Comparison Study Shows Enradin® (enramycin) Possesses Strong Inhibitory Effect on Intestinal *Clostridium perfringens* vs Avilamycin

Growth promoting activities of avilamycin and Enradin (enramycin) Feed Additive have been well perceived. In view of recent prevalence of necrotic enteritis in broiler chickens, the effects of these antibiotics on the inhibition of *Clostridium perfringens* (the causative organism of necrotic enteritis) in the alimentary tract should be elucidated. The

rye-ration evaluation system has been developed to study the inhibitory effect of an antibiotic on *C. perfringens* in vivo. This study compares the effect of avilamycin and that of Enradin Feed Additive on the inhibition of *C. perfringens* in the alimentary tract of chicks under the rye-ration evaluation system.

Key Points

- **Enradin® Feed Additive and Avilamycin were tested in various concentrations, comparing their capacity to reduce *Clostridium perfringens* counts in broiler feces.**
- **Enradin Feed Additive was more effective than avilamycin, demonstrating significant lower counts at both 5 ppm and 10 ppm in feed.**
- **Enradin Feed Additive – the product of choice for Necrotic Enteritis prevention in broilers.**

Materials and Methods

Test Drugs Used:

Avilamycin: Commercial premix (Surmax) containing avilamycin at 25 mg (potency)/g

Enradin Feed Additive:

Commercial premix (Enradin F-40 Feed Additive) containing enramycin at 40 mg (potency)/g

Test Chicks Used:

Broiler breed (Hubbard), male day-old chicks

Method of Administration:

Each test drug (mixed with the ration) was continuously administered for 14 consecutive days by the *ad libitum* method.

Feeding Method:

Group feeding in electric batteries (internal temperature of 32° C)

Test Groups:

Treatment	Number of Chicks	Number of Groups
Non-medicated control	10/group	3
Avilamycin 2.5 ppm	10/group	3
Avilamycin 5 ppm	10/group	3
Avilamycin 10 ppm	10/group	3
Enradin 2.5 ppm	10/group	3
Enradin 5 ppm	10/group	3
Enradin 10 ppm	10/group	3

Bacteriological Examination Details:

- 1) Collection of materials – On day 0, 3, 5, 7, 10 and 14 the whole amount of droppings from the preceding 2-hour period was collected on a group basis.
- 2) Screening medium – The 5% egg yolk-CW agar plate (Nissui) was used.
- 3) Cultural method – A 1-gram portion of pooled droppings was diluted 10-fold and subjected to quantitative culture.
- 4) Cultural conditions – Anaerobic culture (BBL Gas Pak) was carried out at 37° C for 20 hours.
- 5) Counting of cells – The colonies giving a positive LV reaction on the plate were regarded as *C. perfringens* and counted. The count was multiplied by the dilution factor.

Graphic 1 – Number of *C. perfringens* in feces

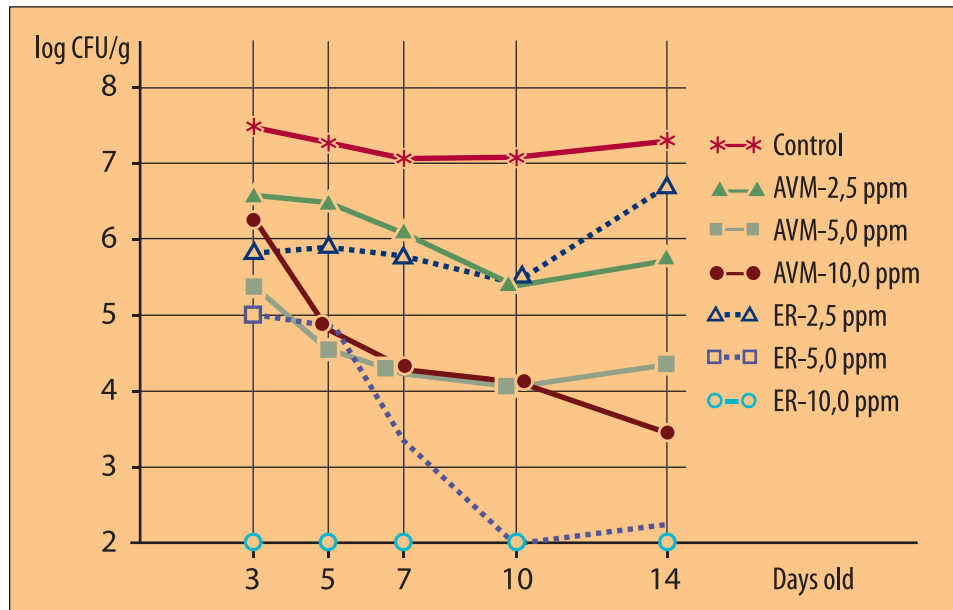
(logCFU/g)

Drug and dosage (ppm)	Group No.	Days old				
		3	5	7	10	14
Unmedicated control	1	7.05	7.24	7.35	6.98	7.91
	2	7.61	7.61	7.04	7.63	7.08
	3	7.80	6.98	6.83	6.69	6.95
	Means	7.49	7.28	7.08	7.10	7.31
AVM - 2.5	1	6.94	7.15	6.56	6.47	6.16
	2	6.35	5.98	5.15	2.00	3.15
	3	6.54	6.44	6.69	7.82	7.97
	Means	6.61	6.52	6.13	5.43	5.76
AVM - 5.0	1	4.16	< 2.00	<2.00	5.47	5.81
	2	5.24	4.82	5.52	4.88	3.55
	3	6.77	6.88	5.16	< 2.00	3.77
	Means	5.39	4.57	4.23	4.12	4.38
AVM - 10.0	1	6.63	4.15	4.20	2.74	3.53
	2	6.39	4.89	4.11	3.00	3.62
	3	5.88	5.39	4.52	6.62	3.36
	Means	6.30	4.81	4.28	4.12	3.50
ER - 2.5	1	6.73	6.41	5.70	7.64	7.00
	2	5.95	7.34	6.37	5.51	8.18
	3	4.88	4.04	5.42	3.26	5.02
	Means	5.85	5.93	5.83	5.47	6.73
ER - 5.0	1	4.72	4.85	<2.00	< 2.00	<2.00
	2	5.26	4.45	6.10	2.00	2.90
	3	5.08	5.26	< 2.00	2.00	< 2.00
	Means	5.02	4.85	3.37	2.00	2.30
ER - 10.0	1	< 2.00	<2.00	<2.00	< 2.00	<2.00
	2	< 2.00	<2.00	<2.00	< 2.00	<2.00
	3	<2.00	<2.00	<2.00	<2.00	<2.00
	Means	<2.00	<2.00	<2.00	<2.00	<2.00

AVM: AVILAMYCIN

ER: ENRADIN Feed Additive

Graphic 2 – Mean numbers of *C. perfringens* for each treatment group



Results

The number of *C. perfringens* in droppings of chicks at the age of 3, 5, 7, 10 and 14 days are shown in Graphic 1 and the changes of mean numbers of *C. perfringens* for each treatment group are shown in Graphic 2.

Discussion

- The non-medicated control group constantly showed the highest number of *C. perfringens*, fluctuating between 7.08 and 7.49 log CFU/g, throughout the test period.

- All the avilamycin-treated groups showed reduced numbers of *C. perfringens* as compared with the non-medicated control group. However, even at 10 ppm of avilamycin, the counts varied between 3.50 and 6.30 log CFU/g.
- In contrast, Enradin Feed Additive at 5 ppm and 10 ppm reduced the number of *C. perfringens* down to the non-detectable level after 10 days of age and throughout the test period, respectively.

Conclusion

Enradin Feed Additive possesses a strong inhibitory effect on the intestinal *C. perfringens* in chicks and its effect is much stronger than that of avilamycin.



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