

THE USE OF CHLORTETRACYCLINE MEDICATED FEED IN THE PREVENTION
AND TREATMENT OF ENZOOTIC DISEASES IN RABBITS

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Chlortetracycline has an antibiotic effect against *E. coli*, *Clostridium perfringens* and also against *Past. multocida*. It is well tolerated by rabbits in long term oral application and reaches effective blood level concentrations. These properties seem to be especially qualified to use the chlortetracycline in the prophylactic treatment of the enzootic pasteurellosis as well as the *coli* dysenterias and enterotoxemia in domestic rabbit flocks.

The purpose of this study was to find out whether the application of allmash feed medicated with chlortetracycline alone or in combination with sulfadimidine may prevent *E. coli*-induced dysentery and is also actively in reducing or elimination of *Past. multocida* from the nasal cavity of latent infected rabbits.

Material and methods:

- Animals: White Newsealand x Californian rabbits with SPF stage, 5 or 12 weeks old at the beginning of experiments.
- Housing-system: Battery cages within temperated rooms with a temperature of 18°C ±2, relative humidity 75-80%.
- Feeding: Rabbit allmash feed (pellets) ad lib with a crude protein level of 16.6% and crude fibre level of 12.6%.
- Drugs:
- a) Aureomycin 100^R (Cyanamid) with 10% chlortetracycline (CTC) - for experimental use 6g Aureomycin 100 was added to 1.000g rabbit allmash feed = 600 ppm CTC in feed.
Daily feed intake a day and growing animal: 60-120 g.
 - b) Aureo S 700^R (Cyanamid) with 77.16g CTC and 77.16g Sulfa-dimidin (Sulfa) per kg allmash feed. - For experimental use 6g Aureo S 700 on 1.000g allmash feed = 465 ppm CTC and 465 ppm Sulfa. The feed intake a day and growing animal: 60-120g.

Experimental infection:

1. *E. coli*, isolated from dysentery diseased rabbits:
10⁷ bacterias given directly into the stomach of 5 weeks old rabbits, simultaneously with 100 000 IU Penicillin, given orally for provoking acute dysentery.
2. *Past. multocida*, isolated from diseased rabbits:
10⁵ bacterias given intranasally into 12 weeks old rabbits.

Parameter:

Clinical symptoms, mortality, weight development and bacteriological stage.

Results:

Experimental infection of young rabbits with 10⁷ *E. coli* bacterias simultaneously with Penicillin induced in all animals of the non medicated controlgroup severe dysentery with high mortality. From 16 infected animals 13 rabbits = 81 % died within 3 weeks after infection.

From the 'Aureomycin 100' medicated testgroup the most of infected animals diseased under the clinical symptoms of diarrhea, but only 12 from 23 = 52.2% died within 4 weeks after experimental infection.

From the second experimental group, treated with 'Aureo S 700' drug supplementation in the feed only 9 rabbits from 26 animals = 34.6% died in follow of severe dysentery, but all animals show varying symptoms of diarrhea.

The comparison of the development of rabbits in the different experimental groups demonstrates significant differences in the growth and body development between the infected but not treated controlgroup to the both medicated groups. The average of weight increase in the surviving rabbits amounts to 4% within the experimental period contrast to a weight increase at 82% or 84% respectively in the both medicated groups at the same period. - The bacteriological control shows that nearly all rabbits of the non medicated controlgroup excreted *E. coli* with their faeces throughout the whole experimental period in contrast to the reduced *E. coli* excretion in the medication groups.

For testing the influence of CTC or CTC plus Sulfa on *Past. multocida* infected rabbits 48 animals were divided in 5 groups, one non infected CTC

'Aureomycin 100' medication controlgroup with 6 animals, one non infected medication controlgroup 'Aureo S 700' with 6 animals, one infection controlgroup without medication with 12 animals, one 'Aureomycin 100' medication and infection group with 12 animals and at last one 'Aureo S 700' medication and infection group with 12 animals. The medication treatment was extended on 3 weeks, beginning 7 days after the infection. All the experimental infected animals became latent infected in its nasal cavity independently of the medication. In total 3 rabbits died in follow of the experimental Past. infection on the 3rd, 13th and 14th experimental day, only in the 'Aureomycin 100' and 'Aureo S 700' medicated group. The pathological lesions were in all three cases an acute pleuropneumonia. Bacteriological examination of nasal swabs during the experiment did not show any differences in the occurrence of Past. multocida between the infected and non treated controlgroup to the animals of the both medicated groups. Past. multocida was isolated from nasal and paranasal cavities of many, but not all rabbits. In trachea, lung and heart Past. multocida was isolated only one time in the lung of an 'Aureomycin 100' treated animal. Differences in the weight development between the control and treated groups became not obviously.

Discussion:

Feeding of growing rabbits with an chlortetracycline medicated feed results a limited prophylactic effect on the outbreak of experimental induced E. coli dysentery particular a reducing of the mortality rate. The prophylactic effect of feed medication with chlortetracycline in combination with 'Sulfadimidin' seems to be better than the only treatment with chlortetracycline also in higher dosage. A distinct influence of 'Aureomycin 100' or 'Aureo S 700' feed medication was established on the weight increase of the infected and diseased animals. The growth suppression following experimental induced dysentery was overcome within 14 days in the treated groups in contrast to the continuously existing growth retardment in the non treated surviving animals.

On the other hand there are no signs of any effect of 'Aureomycin 100' or 'Aureo S 700' medication on the infectious stage with Past. multocida. Both drugs however failed to eliminate Past. multocida from the respiratory tract of latent infected animals. Prevention of snuffles by feeding a diet containing chlortetracycline or sulfonamides seems to be not successful.

Summary:

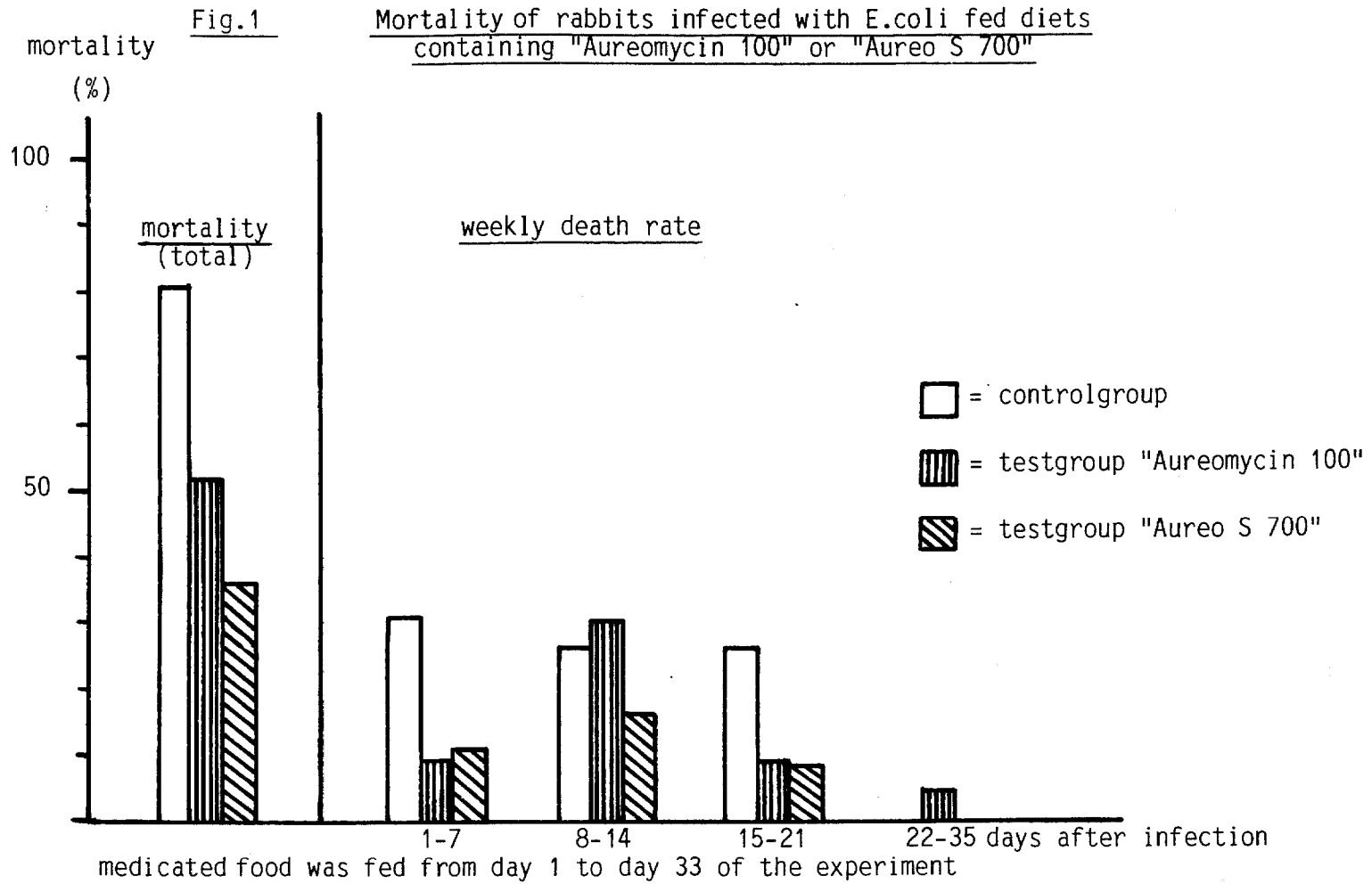
The 'Aureomycin 100' with 10 % chlortetracycline and 'Aureo S 700' with chlortetracycline and 'Sulfadimidin', both from the Cyanamid Inc. in Germany, can be used effectively in the prophylactic treatment of E. coli dysenterias. Mortality decreased and recuperative activity improved clearly, when young rabbits were fed continuously with medicated diets throughout the fattening period. - In the prevention of Past. multocida infections the use of chlortetracycline medication with the feed had had no effective results.

Die-Anwendung von Chlortetracyclin über das medikierte Futter zur vorbeugenden Behandlung enzootischer Infektionen beim Kaninchen.

"Aureomycin 100" mit 10 % Chlortetracyclin und "Aureo S 700" mit Chlortetracyclin plus Sulfadimidin, beide von der Fa. Cyanamid GmbH., können wirkungsvoll zur prophylaktischen Behandlung der E.coli Dysenterien eingesetzt werden. Die Sterblichkeit geht zurück und die Wiedererholung wird deutlich verbessert, wenn die jungen Kaninchen längerfristig während der Mastperiode das Medizinalfutter erhalten. - Kein Erfolg durch medikiertes Mischfutter wird bei der vorbeugenden Bekämpfung der Pasteurella-Infektionen erreicht.

L'application de Chlortetracycline ajoutée au fourrage comme traitement préventif contre les infections enzootiques auprès du lapin.

"Aureomycin 100" avec 10 % de Chlortetracycline et "Aureo S 700" avec de la Chlortetracycline enrichi de Sulfadimidin, tous les deux fabriqués par la maison Cyanamid S.A.R.L., peuvent être appliqués effectivement à l'intention d'un traitement prophylactique d'E.coli dysenteries. La mortalité regresse et la récupération s'améliore nettement, pourvu que les jeunes lapins reçoivent à la période d'embouche le fourrage médicinal pendant une certaine durée. - Aucun résultat n'est obtenu par le mélange de fourrage appliqué à l'intention d'un traitement préventif contre les infections Pasteurella.



Tab.1

Weight gain of rabbits infected with E. coli fed diets containing "Aureomycin 100" or "Aureo S 700"

	age (days) day of experiment	pre experimental period		experimental period*						increase in weight	
		33	40	47	54	61	68	75	82	33th to 82th day of life	1st to 35th day of experiment
		-	-	1st	7th	14th	21st	28th	35th		
<u>control group</u>	number of rabbits	18	16	15	10	4	2	2	2		
	average weight values (g)	610	891	1088	1011	938	850	1042	1133		
	weekly gain (g)		+281	+197	-77	-73	-88	+192	+91	523g= 86%	45g = 4%
<u>testgroup "Aureomycin 100"</u>	number of rabbits	27	23	23	15	13	13	12	12		
	average weight values (g)	613	890	1104	1076	1250	1500	1722	2009		
	weekly gain (g)		+277	+214	-28	+174	+250	+222	+287	1396g= 228%	905g = 82%
<u>testgroup "Aureo S 700"</u>	number of rabbits	27	26	26	23	19	17	17	17		
	average weight values (g)	611	859	1089	1072	1488	1647	1911	2002		
	weekly gain (g)		+248	+230	-17	+416	+159	+264	+91	1391g= 228%	913g = 84%

*rabbits were infected when 47 days old; medicated food was fed from day 1 to day 33 of the experiment

Tab. 2 The isolation of *Past. multocida* from nasal swabs of experimentally infected rabbits fed diets containing "Aureomycin 100" or "Aureo S 700"

day of experiment	infection	examination of nasal swabs					
	1st and 2nd	3rd	5th	15th	22nd	29th	35th
controllgroup "Aureomycin 100"	no	0/6*	0/6	0/6	0/6	0/6	0/6
controllgroup "Aureo S 700"	no	0/6	0/6	0/6	0/6	0/6	0/6
controllgroup antibiotic free diet	yes	4/12	8/12	8/12	12/12	12/12	12/12
testgroup "Aureomycin 100"	yes	5/12	9/11	9/9	9/9	9/9	9/9
testgroup "Aureo S 700"	yes	10/12	10/12	10/11	11/11	10/10	10/10

*number of Pasteurella containing swabs/number of rabbits

**medicated food was fed from day 8 to day 22 of experiment

