STUDY ON CONTROL TECHNOLOGY OF INFECTIOUS RHINITIS OF RABBIT

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ABSTRACT

The relationship between rabbit infectious rhinitis and environmental factors (density, level, cage locations, feeding system, variety, age and season) were observed to study the breaking rules. The optimal drug “Bi Gang Jing” were elected among seven kinds of therapeutic schedules. The effective level and reoccurrence rate were 100% and 87.47% respectively in a case of treatment and reached significant level ($p < 0.05$ or $p < 0.01$). The control of environmental factors was also pointed out.

Key words: rabbit, infectious rhinitis, regularity of outbreak, environment, drug.

INTRODUCTION

Infectious rhinitis is the main and stubborn infectious disease of rabbit. To control it, many kinds of drug and vaccine had been developed, but the effect was limited. In 1980s’, over hundreds of rabbit farms located in Taihang mountainous area of Hebei were investigated. The percentage of morbidity in some rabbit farms is above 50% and reach 80% for adult rabbit, especially Rex rabbit and longhaired rabbit. The loss is big. Over 18 years the author pays more attention to study the relation between infectious rhinitis and environment (including density, level).

MATERIAL AND METHODS

Study 1: On the relation between infectious rhinitis and density, level, and cage location

Adult rex rabbits were placed in four types of cage in which the rabbit number was 2.4, 2.36, 2.16 and 1.35/m^2 respectively. All cages are laid out with 3 level and 4 rows. Management condition is same. The number of Rex rabbit infected infectious rhinitis is calculated according to different density, level and cage location in winter 1997.

Study 2: Relation of infectious rhinitis and feeding system, variety and age

24 rabbit farms were selected and the numbers of infectious rhinitis rabbit were counted according to the variety, range of age and season.

Study 3: Cure schedules

- Benzylpenicillin+streptomycin 50000+50000IU/ml nasal drops, 4 times per day during 3 days
- Gentamycin + "Bi gang jing" 0.25g+2 drip nasal drops 4 times per day during 3 days
- Chloramphenicol + Aminothylline nasal drops 40000IU+200mg/ml 4 times per day during 3 days
- Benzylpenicillin+streptomycin, 50000+50000IU/ml injection 2 times per day during 3 days
- SD-Na 0.25/kg injection 2 times per day during 3 days
- Olaclindox 40mg/kg per os during 3 days
- Bi gang jing 1% mixed into diet.

RESULTS

Study 1

Morbidity of infectious rhinitis in different density

The result shows that the difference of morbidity of infectious rhinitis in four types of cages is not significant between first and second types while it is significant ($p<0.05$ or $p<0.01$) with the third and fourth type of cage.

Table 1. Morbidity of infectious rhinitis with different density.

Type of Cage	Rabbit number	Density(N/m^2)	Area of each rabbit	Morbidity %
1	505	2.40	0.416	13.66
2	496	2.36	0.424	12.93
3	456	2.17	0.461	8.99
4	294	1.40	0.714	5.1
Total	1750	2.08	0.480	10.80

Morbidity of infectious rhinitis due to different level of the cages

The results show that the morbidity varies with levels. The percentage of infectious rhinitis ascends with the cage increasing and the difference is significant ($p<0.01$).

Morbidity of infectious rhinitis in different cage location

The result shows that the morbidity is different with cage location difference. The morbidity of the two rows of house is high, southern is the highest and the middle lowest. There is significant ($p<0.05$ and $p<0.01$) difference between northern, southern with

middle –southern and middle-northern.

Table 2. Statistics of morbidity of infectious rhinitis in different level.

Type of Cage	Amount	Area	Diseased Number			Diseased Percentage		
			up	middle	down	up	middle	down
1	505	69	36	22	11	52.17	31.88	15.94
2	496	64	27	23	14	42.18	35.94	21.88
3	456	41	18	14	9	43.90	34.15	21.95
4	294	15	4	7	4	26.67	46.67	26.67
Sum	1750	189	85	66	38	44.97	34.92	20.11

Table 3: Statistics of morbidity of infectious rhinitis in different cage location

Type of Cag	Total numbers	Area	P	Diseased number				Diseased rate			
				North	Middle north	Middle south	South	North	Middle north	Middle south	South
1	505	69	13.66	15	12	22	20	21.62	17.39	32.43	29.73
2	495	64	12.93	27	12	12	13	42.19	18.75	18.75	20.31
3	456	41	8.99	9	6	8	18	21.95	14.63	19.51	43.90
4	294	15	5.10	4	5	2	4	26.67	33.33	13.33	26.67
Total	1750	189	10.80	55	35	44	62	29.10	18.52	23.28	32.80

Study 2

Morbidity of infectious rhinitis in different age

The result shows: the incidence of infectious rhinitis differs with age newborn rabbit is lowest (4.81%), the next is infancy and young rabbit and adult rabbit is highest. There is significant difference between newborn and infancy rabbit, there is great significant difference between infancy and young and adult rabbit. There is no significant difference between young and adult rabbit, that to say, the incidence increases with age increasing.

Percentage of infectious rhinitis in different variety

The result shows: the percentage of infectious rhinitis in spring, summer, autumn and winter is 24.31%, 23.37%, 24.84% and 26.24% respectively while there is no significant difference among seasons.

Study 3

The efficiency of different drug on infectious rhinitis

The seven schemes had all effect on infectious rhinitis but the effectual numbers and percentage is different. According to the apparent effectual numbers and percentage, the

"Bi gang jin" is best and the difference reached significant ($p<0.05$). The sequence is "Bi gang jing", Olaquindox, Benzylpenicillin+streptomycin, SD-Na, Benzylpenicillin+streptomycin, Gentamyoin + "Bi gang jing".

Table 4 Statistics of morbidity of infectious rhinitis in different age

Content	Newborn rabbit			Infancy rabbit			Young rabbit		
	Total Numbers	Diseased Numbers	Diseased rate	Total numbers	diseased Numbers	Diseased rate	Total numbers	Diseased Numbers	Diseased rate
Meat rabbit	2046	62	3.03	1568	315	20.09	769	183	22.99
Fur rabbit	1920	115	5.99	1413	396	28.03	1063	436	41.02
Hair rabbit	1023	637	6.16	511	159	31.12	496	257	12.02
Total	4989	240	4.81	3492	870	24.91	2353	876	37.23

continue

Content	Adult rabbit			total in		
	Total numbers	Diseased numbers	Diseased rate	Number cage	Diseased Numbers	Diseased rate
Meat rabbit	1469	383	26.07	5879	943	16.04
Fur rabbit	1214	584	48.11	5610	1513	27.29
Hair rabbit	731	380	51.96	2759	859	31.13
total	3414	1347	39.46	14248	333	23.39

Table 5. Statistics of percentage of infectious rhinitis in different season.

season	spring	summer	autumn	winter	total
Total numbers	4274	3528	3454	2992	14248
Diseased numbers	1039	221	258	779	3333
Diseased rate	24.31	23.27	24.84	26.24	23.39

DISCUSSION

Respiratory disease is normal infectious disease in rabbit. Studies show that many pathogens, such as Pastoral multocida, staphylococcus aureus, pseudomonas, B.bronchiseptica, proteus can lead to it. Pasteurella multocida and B.bronchiseptica was the main factors. Generally speaking they are common germ groups in rabbit body and

most of them are located in nasal mucous membrane and tonsil. Infectious rhinitis is a kind of chronic and strong infectious disease and should be paid more attention to.
The disease was associated with density. The main reason that is that the environment become more polluted with the density increasing which lead the pathogenic microorganism growth.

Table 7 .Statistics of efficiency of different drug on infectious rhinitis

Scheme	Method	Diseased numbers	Apparent cured animals	%
Benzylpenicillin+streptomycin	Nasal drops	1320	634	48.03
Chloramphenicol+Aminothylline	Nasal drops	206	114	55.34
Gentamyoin + "Bi gang jing"	Nasal drops	232	96	41.38
Benzylpenicillin+streptomycin	Injection	1017	631	62.05
SD-Na	Injection	264	140	53.03
Olaquindox	Per os	588	418	71.09
"Bi gang jing"	Per os	1908	1669	87.47

The incidence is increased with the level of cages increasing. It is that the adverse gas concentration is changed with the level changing. In the higher level, the harmful gas density is thicker and the pathogenic microorganism reproduced faster.

The incidence of rhinitis changes with cage location. The incidence located in south and north is higher than that in the middle. The phenomenon is caused by harmful gas concentration. Harmful gas disperses from the top to the bottom and move towards wall firstly. So the concentration close to wall is high while concentration in the middle is low. Most winter wind moves from north to south so the concentration of harmful gas in south higher than that in north.

Infectious rhinitis mainly happened in spring and autumn. The author investigates 24 rabbit farms and discovered the incidence of infectious rhinitis is the highest in winter, the next is spring and autumn and summer is the lowest, but the difference in the four seasons is not significant.

Through the investigation, the difference of incidence rate in different rabbit farms is great. This depends mainly on nutrition, management and environment.

Much research on drug of controlling infectious rhinitis, such as streptomycin, benzylpenicillin, chloramphenicol, gentamycin, erythromycin sulfanilamide and furan, was carried on. The results show that they all have effect on this disease. In practical, that efficacy of the drugs becomes worse with the same drug was used for long time. "BI Gang Jingo" is a complex of traditional Chinese herb and antibiotics and had no negative function.

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