

Research and Analysis on 211 Cases of Toxic Disease of Chinese Domestic Rabbits

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Abstract: In this paper induction and analysis was carried out concerning toxic diseases of domestic rabbits reported in China from 1994 to 2002. 78 papers were adopted, involving 212 cases of toxic events of domestic rabbits and 23 kinds of poisonous types. 34558 rabbits were poisoned in all and 8551 ones died. The mortality was 24.74% (with 19 cases not providing the particular number of poisoned rabbits). Among 212 cases, 145 cases were caused by diet, 41530 rabbits were poisoned and 2595 died; 67 cases were caused by drug, 13028 rabbits were poisoned and 5956 died. The mortality of each kind was 12.05% and 45.75% respectively. In addition, there were a good few pregnant rabbits with abortion or stillbirth. Among diet poison cases, there were 35 cases caused by fungi toxins, 12 cases by plant toxins, 88 cases by organic phosphorous insecticide and 10 cases by other factors. The number of poisoned rabbits was 17626, 1047, 1609 and 1248 separately. The number of dead rabbits was 602,542, 885 and 566 separately. The mortality of each kind was 3.42%, 51.77%, 55.00% and 45.35% separately. Among medicine poison cases, there were 9 cases caused by anti-bacterial medicine, 48 cases by anti-coccidium medicine (of which 46 cases were Maduramicin), 4 cases by acaricide and 6 cases by other drugs. The number of poisoned rabbits was 1646, 11084, 136 and 162 respectively. The number of dead poisoned ones was 230, 5629, 26 and 71 respectively. The mortality of each kind was 13.97%, 50.78%, 19.12% and 43.83% respectively. [Nature and Science. 2005;3(1):32-36].

Key Words: domestic rabbit; toxic disease; diet poison; drug poison; fungi toxin; plant toxin; Maduramicin

1 Introduction

Domestic rabbit is a small animal, which has weak resistibility against diseases, and its metabolism is easy to be confused to cause diseases in some way. In practice, great importance tends to be given to the prevention of contagious diseases and little to the administration and the influence of poisonous, pernicious stuff to the health of the rabbit so as to cause great loss in the production.

The paper analysed the relationship between animal feed poison and feeding pattern, toxin poison and mortality, drug poison and mortality, medicine poison and way of application.

According to the analysis of these articles, it was suggested that scale rabbit farms should pay attention to fungi toxin resulted from mouldy roughage fodder, rabbit farms in the country should mainly prevent poison caused by organic phosphorous insecticide, it was prohibited to use Maduramicin as the

anti-coccidium medicine of rabbits and important to popularize the knowledge of scientific use of rabbits feed and medicine towards lots of rabbit-keepers. The author organized and studied the documents from 1994 to 2002 on the rabbit's toxic diseases of China and give some suggest to prevent these diseases effectively.

2 Investigation and analysis

Exploit the bank of Chinese periodical full-text, search the relative documents by the searching words of rabbit and toxication on the basis of the respective segment of topic, key words, abstract and full-text and then consult the above documents one by one. All the documents on the report of cases are listed as the material for consultation. The adopted documents then are listed, classified according to the toxication genre, case load, ingredients of toxin, feeding quantity, feeding time, numbers of toxication, numbers of death, main symptom, pathological dissection, diagnostic, treating measures, treatment result, source of document.

There are two categories of toxication: by feed and by drug. The toxication by feed is further divided into four parts: roughage, concentrate, total mixed ration and succulence; among the toxic ingredients are mycotoxin, plant toxin (such as gossypol, oleandrin, hydrocyanic acid, alkaloid and etc.) and the others (such as fluorine, alcohol, urea, estrogen, sulfite and nitrite; among the toxication by drug, the drugs are divided into four categories: antibacterial drug, anticoccidial drug, anti-mite drug and others (such as patulin) . According to the usage , the drug can be divided into oral drug, external drug and others (such as toxication by misusing rodenticide) . The following is the analysis of the above respectively.

3 Results

3.1 Distribution of the toxication

457 relevant articles were searched and 78 were adopted. 212 cases of rabbit toxications were involved, the number of the toxic rabbits is 34558(19 cases gave no concrete numbers of the toxic rabbit) , the number of death is 21530 and the death rate is 24.74%. Among which there are 145 cases of toxication by feedstuff, accounting for 68.4%,and the number of the toxic rabbits is 21530,with 2595 dead and the death rate is 12.05%, accounting for 35%of the total dead; there are 67 cases of toxication by drug, accounting for 31.60% of the total cases, and the number of the toxic rabbits is 13028, with 5956 dead, and the death rate is 45.72%, accounting for

69.65% of the total dead. Moreover, there are large numbers of doe abortion and dead embryos.

3.2 Toxication by diet

Categories of the feed

There are 22 cases of roughage toxication , 14 cases of concentrate toxication, 6 cases of total mixed ration toxication and 103 cases of succulence toxication, the toxication rate is 15.17%, 9.66%, 4.14% and 71.03% respectively; the respective number of the toxic rabbits is 17022, 2226, 31 and 2251, accounting for 79.06%, 10.34%, 0.97% and 50.33% of the total feedstuff toxication; the number of death is 632, 632, 25, and 1306 respectively and the death rate is 3.71%, 28.39%, 80.65% and 58.02%, taking up 24.35%, 24.35%, 0.97 and 50.33% of the total dead.

Ingredients of the toxin

There are 35 cases of rabbit toxication by mycotoxin, 12 by plant toxin, 88 by organic phosphorus toxin and 10 cases by others, accounting for 24.14%, 8.27%, 60.69% and 6.90% of the total cases of the rabbit toxication; the number of toxicated rabbits is 17626, 1047, 1609 and 1248 respectively, taking up 81.87%, 4.86%, 7.47 and 5.80 of the total toxication by feed; the number of death is 602, 542, 885 and 566 respectively, and the death rate is 3.42%, 51.77%, 55.00% and 45.35%, the proportion being 23.20%, 20.89%, 34.10% and 21.81% of the total dead by drug toxin.

Table 1. Stat of ingredients of the toxin

Item	Cases of toxication		Number of toxication		Number of death		Proportion to the total death	
	case	%	number	%	number	%		
Categories of feedstuff	Roughage	22	15.17	17022	79.06	632	3.71	24.35
	Concentrate	14	9.66	2226	10.34	632	28.39	24.35
	Total mixed	6	4.14	31	0.14	25	80.65	0.97
	Succulence	103	71.03	2251	10.46	1306	58.02	50.33
	Total	145	100.00	21530	100.00	2595	12.05	100.00
ts en	Mycotoxin	35	24.14	17626	81.87	602	3.42	23.20

Plant toxin	12	8.27	1047	4.86	542	51.77	20.89
Organic insecticide	88	60.69	1609	7.47	885	55.00	34.10
Other toxins	10	6.90	1248	5.80	566	45.35	21.81
Total	145	100.00	21530	100.00	2595	12.05	100

3.3 Toxication by drug

Categories of drugs

There are 9 cases of toxication by antimicrobial drug, 48 cases of anticoccidial drugs (among which there are 46 cases of maduramicin toxication), 4 cases of mite-killing drug toxication and 6 cases of others, accounting for 13.43%, 71.64%, 5.97% and 8.96% respectively; the respective of the toxic rabbit number is 2646, 11084, 136 and 162, accounting for 12.65%, 85.08%, 1.04% and 1.24%; the number of death for toxin is 230, 5629, 26 and 71 respectively, and the death rate is 13.97%, 50.78%, 19.12% and 43.83%, accounting for 3.86%, 94.51%, 0.44% and 1.19% of the total death by drug toxication respectively.

Usage of drug

There are 61 cases of toxication for taking drug orally, 4 cases for using drug externally, 2 cases for misusing drug, accounting for 91.04%, 5.97% and 2.99% respectively of the total cases of toxication by drugs; the number of the toxic rabbits is 12828, 136 and 64 respectively, taking up 98.47%, 1.04% and 0.49% of the total number of the toxication; the number of death for toxication is respectively 5889, 26 and 41, and the death rate is 45.91%, 19.12% and 64.06% respectively, accounting for 98.88%, 0.44% and 0.68% of the total dead for toxication by drug.

Table 2. Stat of toxication by drug

Item	Cases of toxication		Number of toxicated rabbit		Number of death		Proportion to the total death (%)	
	case	%	number	%	number	%		
Categories of drug	Antibacterial	9	13.43	1646	12.65	230	13.97	3.86
	Anticoccidial drug	48	71.64	11084	85.08	5629	50.78	94.51
	Killing mite Drug	4	5.97	136	1.04	26	19.12	0.44
	Others	6	8.96	162	1.24	71	43.83	1.19
	Total	67	100.00	13028	100.00	5956	45.72	100.00
Usage for taking drug	Oral drug	61	91.04	12828	98.47	5889	45.91	98.88
	External drug	4	5.97	136	1.04	26	19.12	0.44
	others	2	2.99	64	0.49	41	64.06	0.68
	Total	67	100.00	13028	100.00	5956	45.72	100.00

4 Analysis and discussion

4.1 Wide spread of rabbit toxication

In the articles published in China from 1994 to 2002, there are 212 cases relevant to rabbit toxication, in the reports, the number of the toxic rabbits being 34558, the number of death being 8551. Among which there are 145 cases of toxication by feedstuff, the number of death is 2595; there are 67 cases of toxication by drug, the number of death is 5956, all these brings a great loss to the production. In fact, in China, the figure can be greater for there are cases unreported for unknown reasons and some cases of toxication undiagnosed for the lacking of relevant equipments. For example, in this article, only three cases of olaquinox toxication are introduced (among which there is only a case of toxication simply by olaquinox and two cases by furalzolidone), being mixed with olaquinox, nevertheless in production, the cases of olaquinox toxication that the author diagnosed and handled can amount to more than 20, which caused great numbers of doe abortion and dead embryos; moreover, the categories of toxications involved in the article only include about 23 kinds, such as mycotoxin, estrogen, oleandrisin, urea, hydrocyanic acid, fluorine, alcohol, urea, sulfite and nitrite gossypol, olaquinox, Robenidine, maduramicin, oxytetracycline and rodenticide, and other categories of toxications such as the toxications of NaCl, rapeseed cake, organic chlorine, sulfanilamide, salinomycin, NH₃, CO are not reported, which the author once met with in the rabbit study and production. From the above facts, it is easily understood that there is a widespread phenomenon of rabbit toxications, even more serious in some rabbit farms.

4.2 Toxication by feed and feeding ways

Of the 145 cases of toxication by feed, roughage, concentrate, total mixed ration and succulence account for 15.17%, 9.66%, 4.14% and 71.03 of the total cases respectively and succulence toxication takes up two thirds of the total. But the number of the toxic rabbit is 17022, 2226, 31 and 2251 respectively, which clearly shows that the succulence toxication most likely appears in small rabbit farms, especially the small household rabbit farms in the villages, while the roughage toxication in large scale. It is also reflected that the household rabbit farms of small scale share the larger part of China's market, and the weak technological sense and the feeding technology of the

rabbit breeders need improving. As to the relationship between the categories of feedstuff and the ingredients, of all the cases of toxication of roughage, refined feedstuff and mixed feedstuff, 83.33 is toxication by mycotoxin, while of the toxication by succulence, 85.44% of the cases is the toxication by organic phosphorus, 10.68% is by plant toxin. Here we can notice that the toxication for moldy feedstuff easily takes place in rabbit farms of large scale while the toxication for mis-eating the succulence sprayed by the organic phosphorus insecticide easily takes place in the household rabbit farms of small scale in the villages.

4.3 Categories of toxins and death rate

The death rate of toxication is relevant to the ingredients of toxins and the absorbed quantity, as well as the physiological condition of the domestic rabbits. The death rate of mycotoxin, plant toxin, organic insecticide and other toxins is 3.42%, 51.77%, 55.00% and 45.35 respectively, and the death rate of the last three is very high. In different toxin ingredients, the death rate of toxication for oleandrisin is 100%, the death rate of toxication for hydrocyanic acid amounts to 86.52% and that for nitrous salt is 28.73%. Though the death rate of toxication for mycotoxin is relatively low, it acts as one of the chronic sediment, affecting the stud rabbit in its multiplying period, and characterized by doe abortion and stillbirth, which not only causes certain death rate, but also brings danger to human's health due to the internal toxin sediment.

4.4 Toxication by drug and death rate

Of all the toxication by drug, the death rate of the toxication for antibacterial, anticoccidial drug, mite-killing drug and other drugs is respectively 13.97%, 50.78%, 19.12% and 43.84%, of which the highest death rate comes to anticoccidial drug and other drugs (mainly misusing rodenticide). As to the anticoccidial drug, there are 46 cases of toxication for maduramicin, taking up 68.66% of all cases of toxication by drug, and the number of death is 5347, accounting for 89.76 of death for toxication by drug. There are 2 cases of toxication for Robenidine, with 282 rabbits dead, death rate 25.64%; there are 2 cases of toxication for rodenticide, with 41 dead, death rate 64.06%. From the above facts, one can see the necessity to articulate to the rabbit breeders the toxicity of maduramicin to domestic rabbits and the urgency to control its use.

4.5 Toxication by drug and the usage

Of all the toxication by drug, except for the rabbit's sensitivity to maduramicin, most toxication is caused by the abuse of other drugs. Firstly, an overdose of drug, not according to the instruction, for example, in some cases, olaquinox was overdosed in the feedstuff to 1000 milligram per kilo ; secondly, an extended use, not according to the period of treatment, for example, in some rabbit farms, in order to prevent diarrhea, some breeders add furazolidone to the feedstuff for as long as half a year; thirdly, using drugs without identifying objects, for example, when preventing coccidiosis, baby rabbits are its object, but all rabbits are involved, with the result of toxication of lactating does; fourthly, disproportional stirring of feedstuff, especially in rural household rabbit farms, there being no stirring equipments, and disproportional stirring of feedstuff easily takes place.

4.6 Toxication and treatment

Most toxications have their particular clinical symptoms and diagnostic, pathological changes, the two charts that the article introduces can help diagnose the toxication in production. But large numbers of cases of toxication have no specifics, and generally the allopathy and backup treatment are adopted. Therefore, spreading feedstuff science and medicine science is the key to lower the toxications of rabbits.

In one word, animal toxications not only cause loss to production but also bring danger to the environment as well as human's health. So, lowering and preventing the happening of toxications of rabbits are the duty and responsibility of our technological workers on rabbit study. Through the analysis of the cases of toxications of rabbits in China, one can conclude that the happening of toxication is a widespread phenomenon, and to solve the problem of the feedstuff molding is one of the difficulties; controlling the use of organic phosphorus insecticide in grains and using biologic drug as the substitute are the key to preventing the toxication of organic phosphorus insecticide in rabbit household farms of small scale; spreading the knowledge of rabbit breeding to breeders and identifying the difference between toxic plants and the feedstuff are effective measures to lower the happening of toxication by feedstuff; domestic rabbits are very sensitive to maduramicin, so it shouldn't be used as anticoccidial drug for rabbits, it is suggested that relevant producers should give the warning "rabbit forbidding" in the

marked place of the commodity package.

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