

USE AND ABUSE OF ANTIBIOTICS IN ANIMALS

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Introduction

The introduction and development of antibiotics brought about dramatic advances in medical history and were vital in decreasing to a very low percentage many diseases which were previously depicted as untreatable (Downey, 1978). They soon became widespread and their success was immeasurable bringing about a sudden decline in the incidence of life threatening diseases such as pneumonia and tuberculosis, not to mention the cure of not very serious ailments.

Different antibiotics are dissimilar from the point of view of chemical and physical properties thus exhibiting variable modes of action and in turn different toxicological properties in animals. Besides being therapeutically effective, antibiotics exhibit other important properties including the growth stimulation of poultry and livestock. Unfortunately, the latter property has been subjected to many abuses. In humans, it may transiently acquire resistant flora and on rare occasions develop salmonellosis and other conditions due to the consumption of meat, milk and eggs contaminated with antibiotic residues (Du Pont et al., 1987).

Other applications of antibiotics include the preservation of certain biological materials, example: virus vaccines, treatment of some plant diseases and the prevention of spoilage of fresh meat and fish utilised for experimental purposes.

More work has to be advocated locally in order to overcome more effectively animal infections/diseases and the problems/abuses related with antibiotic-mediated growth promotion of live-stock. The scope of this project is to help extend the health services offered to these animals through an evaluation of the present situation in Malta and in turn by recommending the ideal ways and means by which the veterinarian and the pharmacist ensure successful antibiotic therapy in the most important applications. These recommendations are based on two surveys and a study carried out in Summer 1991 and from an evaluation of the European Community controls concerning antibiotic use in animal husbandry including the means through which problems of legislation are overcome. Besides, this project serves as a stepping stone for future studies.

Methodology and Results

Two surveys and a study were accomplished. Both surveys incorporated the use of a pilot study. The main objectives of the first surveys were to establish the extent of antibiotic abuse undertaken by local farmers, the reasons behind these abuses and in turn what should be done in order to decrease antibiotic abuse to a minimum. It involved the personal interview of 200 Gozitan farmers. It was decided to carry out this survey by an interview rather than by a postal questionnaire for two reasons. First, the majority of farmers are illiterate and they have very poor pharmacological knowledge. Secondly, interviews allow greater flexibility for probing and observational data. The questions utilised were set up in simple terms to be understood by everyone. Ethics and additional information given by farmers were also considered. In this survey:

- i) 114 (57%) always consult a vet in animal infections
- ii) 26 (13%) consult a vet whenever personal treatment fails
- iii) 60 (30%) do not normally refer animal infections to a vet
- iv) 144 (72%) are unaware of the role played by antibiotics in their most important applications
- v) 64 (32%) argued that they are poorly informed by the drug dispenser
- vi) 48 (24%) have a tendency to administer the same antibiotic/s irrespective of the animal infection
- vii) 80 (40%) indulged in antibiotic abuse during some past experience
- viii) 148 (74%) claimed that the role of the pharmacist is very important in the veterinary field

The main objectives of the second survey were to establish the vets/vet assistants' views regarding the antibiotic use and abuse undertaken by local farmers and to assess the latter's needs in view of the reasons behind the antibiotic abuses taken. This survey was conducted with 12 veterinarians and 13 vet assistants through the use of a questionnaire. It was decided to carry out this survey by a postal questionnaire rather by an interview since the chances for vets and vet assistants to misunderstand the questions put forward were practically nil.

The greatest limitation of this survey was the small number of questioned individuals due to the relatively small number of veterinarians in Malta and Gozo. This is the main reason why the author included 13 vet assistants. Besides, the latter could be very helpful due to their

practical experience generated from their constant 'contact' with farmers during their work. However, it is important to mention that the answers given by veterinarians were given more priority than those of vet assistants, besides the fact that some questions could not be answered by the latter. Various factors were studied in detail and the questions utilized alternated between open and closed ones. Additional information given by vets/vet assistants was also considered. In this survey:

Reasons for which farmers do not consult a vet (according to vet/vet assistants):

- i) 16 (64%) blamed the farmers' mistaken mentality
- ii) 5 (20%) mentioned the non-availability of a vet at a close distance
- iii) 3 (12%) included a combination of above plus the problems of lack of time
- iv) 1 (4%) included first two reasons and the financial problems involved

Extent of farmers' compliance according to vets/vet assistants:

- i) 17 (68%) described the overall compliance as being good

Suggested ways in which compliance may be increased (vets/vet assistants):

- i) 11 (44%) suggested that the dispenser should give more importance to the information during dispensing
- ii) 9 (36%) suggested the use of drugs generally administered at a low frequency and that information during dispensing should be given in simpler terms
- iii) 5 (20%) suggested that the dispenser should stress on the adverse effects precipitated in case the farmer does not comply
- iv) 25 (100%) described the role of the pharmacist as vital in the veterinary field

The study consisted of a testing programme based on E.E.C. standards for antibiotic residues in meat from Malta's civil abattoir. The aim was that of establishing the extent of local antibiotic abuse in view of the presently increasing application of veterinary antibiotic intended to promote growth and health of livestock, thus throwing light on the

measure to be imposed in order to enhance the quality of the local meat products.

The testing method was the EEC-four-plate-method. This is the standardized method for the detection of residues of antibacterial substances in fresh meat as considered by the Scientific Veterinary Commission of the Commission of the European Communities. The tests were applied on meat samples of Malta's cattle, swine and solipeds thus obtaining a general view of local antibiotics abuse. Besides, the data obtained would be representative of practically all the animal populations liable to be given antibiotics with the intention of promoting their growth and health.

The positive results obtained during the testing of meat samples indicates antibiotic abuse. The following results were obtained:

Table 1: Percentage (%) of meat samples which gave a positive result for the presence of the following residues:

Meat samples	Chloramphenicol	Other antibiotics	Sulphonamides
Bulls	2.27	11.36	13.64
Cows	1.92	9.61	13.64
Swine	.92	9.80	13.73
Solipeds	4.96	9.52	14.29

Conclusion

Through conclusions drawn and recommendations done, what in essence is being advocated is:

- i) the need of controlling veterinary antibiotics as medicinal products to be dispensed on a vet's prescriptions by authorised people only, including the pharmacist
- ii) the need that the farmers comply to vet/pharmacist's advices
- iii) the reinforcement of the legislation governing the penalties exerted whenever antibiotic abuse takes place
- iv) the need of carrying out a national study to evaluate the antibiotic physiological level of local farm animals so as to have

national reference values of antibiotic levels in the meat of these animals

- v) the exertion of a more active role by local pharmacists in the veterinary field

References

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