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Research Article

Current practices in the veterinary use of antibiotics in poultry laying hens in Friguiagbé (Guinea)

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Abstract

The use of antibiotic molecules on poultry farms, while justified by their efficacy, must be carried out rationally, as their uncontrolled use modifies the ecology of bacteria and thus contributes to the selection of multi-resistant bacteria. The aim of this study was to carry out a descriptive survey of antibiotic use on laying hen farms in the sub-prefecture of Friguiagbé (Kindia). To achieve this, surveys were carried out among veterinary service managers, poultry farmers and sales outlets. At the end of our work, we identified the existence of two (2) veterinary pharmaceutical supply establishments. Establishments selling veterinary medicines revealed that Tetracycline is the most widely marketed antibiotic family. The most widely used antibiotic molecules are Tetracolivit and Oxytetracycline (26%); Neoxyvital (13%); Alfaceryl and Panteryl (8%); Limoxin (5%); Enrofloxacin, TTS, Colisol and Amoxillin (3%), which are used either for preventive or curative purposes.

Keywords : Antibiotic molecules, poultry farming, laying hens, Guinea

INTRODUCTION

The Republic of Guinea possesses an agropastoral tradition and immense natural potential, with its diverse agro-ecological conditions. Experts believe that global consumption of poultry is steadily increasing, possibly due to its dietary benefits and relatively lower cost[1-2]. In Africa, government policies have developed short-cycle animal breeding sectors, such as poultry farming, to satisfy the growing demand for animal proteins among populations and to fight for food self-sufficiency[3]. In the Republic of Guinea, national poultry production in 2020 is estimated at 37,000,000 head[4]. Modern poultry farming is characterized by a deficit between the growth of poultry farms and their productivity, as they are affected by multiple financial and pathological constraints. Poultry pathologies remain one of the limiting factors in the development of this type of farming, as they lead to heavy livestock losses[3]. Faced with this situation, breeders are turning to drugs for preventive and/or curative purposes, most notably antibiotics, which are the main class of veterinary drugs used since the 1950s to treat infectious diseases of bacterial origin. In poultry farming in particular, therapy is an indispensable tool for reducing the enormous losses caused on poultry farms by bacterial infections. In 2013, according to the WHO, at least 50% of antibiotics were used on animals. In the United States, 80% of antibiotics sold are for animals, including 2% for pets and 98% for livestock. Unfortunately, these products are sometimes used in an abusive and uncontrolled way. Antibiotics misuse in animals poses a serious threat to human health, Although the use of antibiotic molecules, if justified by their efficacy, must be carried out rationally, as their uncontrolled use modifies the ecology of bacteria and thus contributes to the selection of multi-resistant bacteria. Moreover, it represents the main cause of antibiotic resistance in animals and humans. Another consequence of antibiotic improper use is the presence of active residues in animal products (eggs and meat). This may have harmful effects for the consumer, raising a public health issue[5-6]. It is therefore urgent to develop measures to reduce the use of antibiotics on laying hen farms. For this purpose, it is necessary to know the state of current practices related to the use of antibiotics on farms.

MATERIALS AND METHODS :

MATERIAL :

I. Study area

The prefecture of Kindia is located 135 km from the capital of Guinea, Conakry. It is a densely populated cosmopolitan city and the regional capital. It is situated at an altitude of 458.13

m, in the area of transition between Lower Guinea and Fouta. Located between latitude 100 03' north and longitude 12052' west, it covers an area of 9115 km2. Representing 3.9% of the national surface area, with a population of 510,624 inhabitants or an average density of 56.02inhabitants/ km2, it is bounded :

-to the east by the prefecture of Mamou ;

-to the west by the prefectures of Coyah and Fria;

-to the north by the prefecture of Télémilé ;

-to the south by the Republic of Sierra Leone.

II. Materials used :

This study focused on a total of eleven (11) randomly selected laying hen farms in the sub-prefecture of Friguiagbé (Kindia).

METHODS:

The aim of this work was to carry out a descriptive study of antibiotic use on laying hen farms in Friguiagbé-Kindia.

To achieve this objective, the following methodology was adopted:

1. Consultation of managers and analysis of veterinary service archives

The field work was started by consulting the authorities of the prefectural directorate of agriculture, with the aim of gathering information on poultry farming.

2. Survey of establishments supplying veterinary medicines

This stage involved visiting veterinary medicine sales establishments where poultry farmers and animal health workers obtain their supplies, in order to determine the flow of veterinary medicines being sold, particularly antibiotics, as well as their storage conditions.

3. Survey of poultry farmers

We discussed with poultry farmers using a pre-established questionnaire focusing essentially on the following points: the operators responsible for administering antibiotics, the times of therapeutic intervention, compliance with the withdrawal period, method of storage, etc.

4. Survey of animal health professionals

This consisted in collecting data on commonly encountered bacterial pathologies, the methods of diagnosis, the mode of use of antibiotics, their families , their frequency, the reasons for use and the mode of antibiotic procurement.

5. Data analysis and processing

The data collected were processed and analyzed in databases previously created with Sphinx iQ2 version 7.4.0.0 and Excel.

RESULTS

1. Consultating managers and analysing archives

The consultation of managers from the Kindia Prefectural Directorate of Agriculture and Livestock revealed the existence of two (2) drugstores. However, the quantity of antibiotics consumed is not known, due to the lack of collaboration between these managers and the structures where the products are sold. In addition, analysis of the archives provided no information on antibiotics for veterinary use in the study area.

2. Survey of veterinary drug sales establishments

The results obtained from drug sales establishments are set out in the attached table.

Table 1: Quantities of antibiotics sold and their storage conditions.

Families	quantity of active ingredients (g)	Proportion (%)	Storage conditions
Tetracyclines	920	83,63	**At room temperature**
Betalactam antibiotics	45	4,09	
Quinolones	40	3,63	
Polypeptides	52	4,72	
Sulfonamides	43	3, 90	
Total	1100		

1. Survey of poultry farmers

The results of the survey of poultry farmers are shown in the tables and figures below:

a. Identification of those responsible for administering medicines (figure 1)

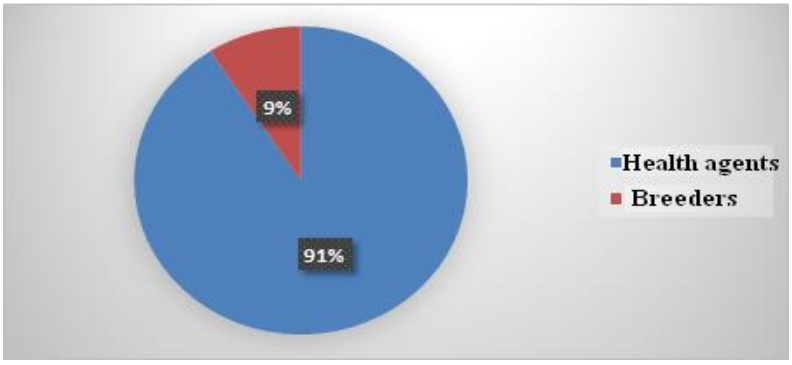

Figure 1: Proportion of staff responsible for administering medicines

b. Time of therapeutic intervention (Figure 2)

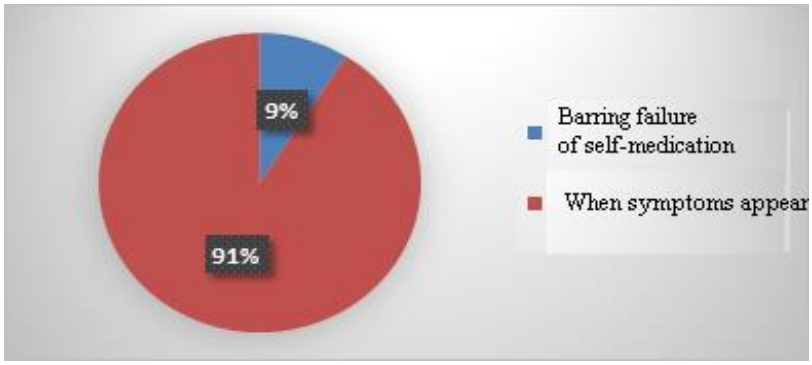

Figure 2*:* Breakdown of therapeutic intervention times

c. Poultry farmers' compliance with the waiting period (Figure 3)

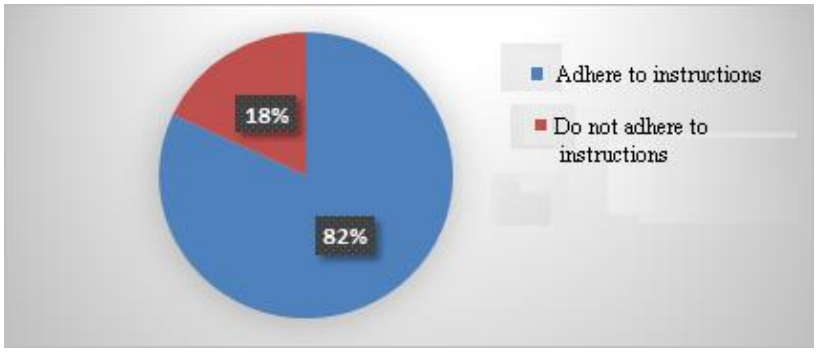

Figure 3: Distribution of stakeholders according to compliance with the waiting period by poultry farmers

d. Storage method (Figure 4)

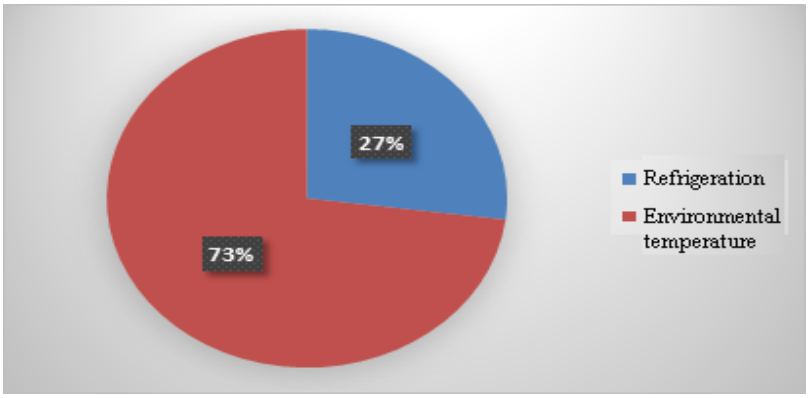

Figure 4: Antibiotic storage methods

2. Survey of animal health workers

The survey of animal health workers was carried out according to the bacterial pathologies encountered, the diagnostic methods used, the way in which antibiotics are used, *the* frequency of use of antibiotics, the reasons for using antibiotics and the way in which antibiotics are supplied.

a. Common bacterial pathologies (Figure 5)

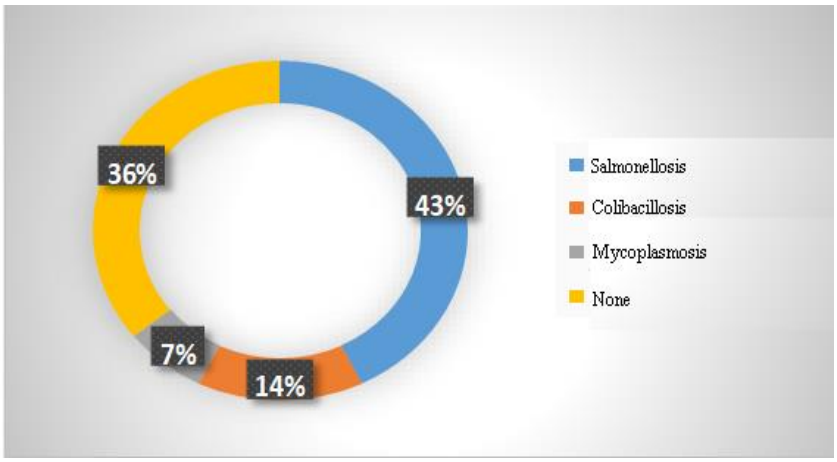

Figure 5: Distribution of commonly encountered bacterial pathologies

b. Diagnostic methods (see Table 2)

Table 2: Diagnostic methods applied

Diagnostic methods	Number of agents
Symptoms observed	11
Clinical observation and autopsy	0
Veterinary diagnostics laboratory	0
Total	11

c. Methods of use of antibiotics (Figure 6)

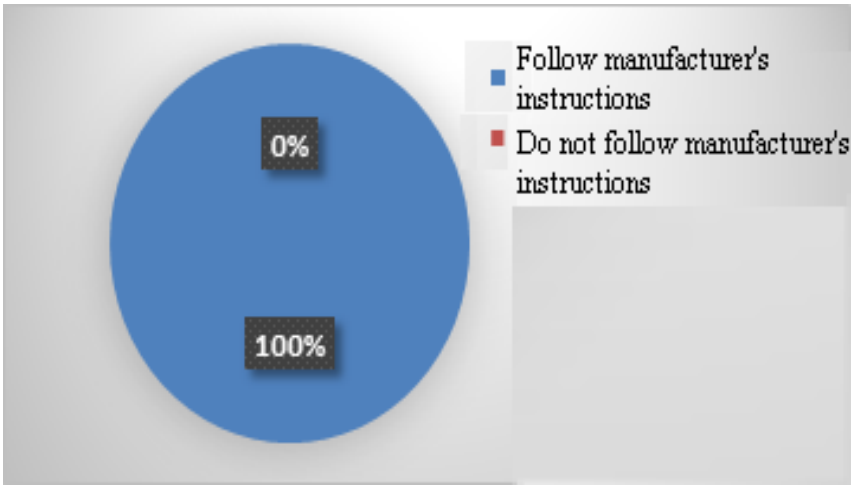

Figure 6: Proportion of antibiotic use patterns

d. Frequency of antibiotic use

The results of the survey on the frequency of antibiotic use are shown in the figure below.

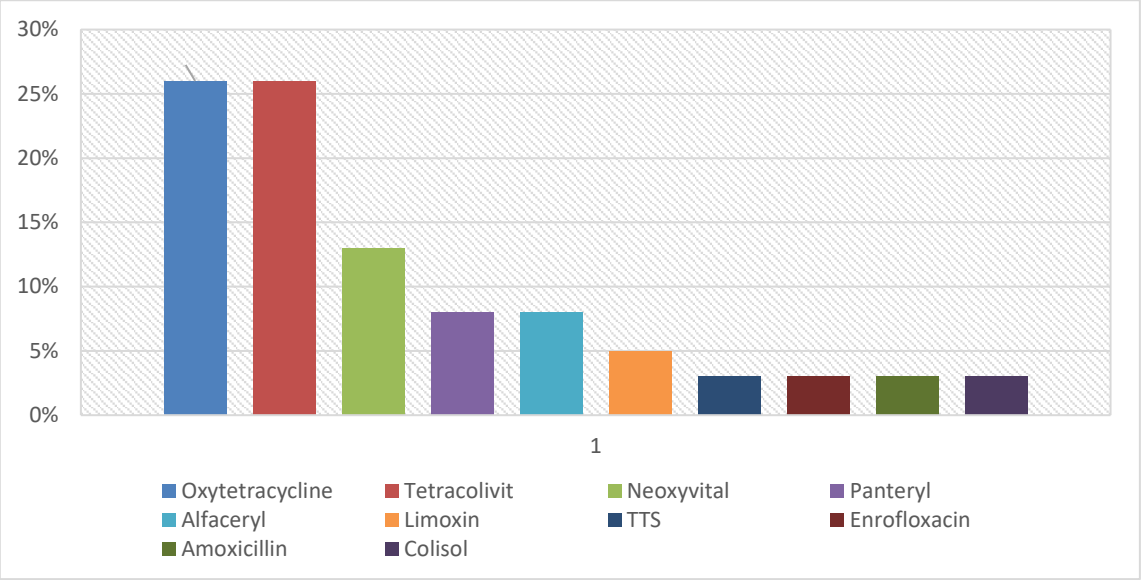

Figure 7: Distribution of the frequency of antibiotic use .

Reasons for using antibiotics (Figure 8)

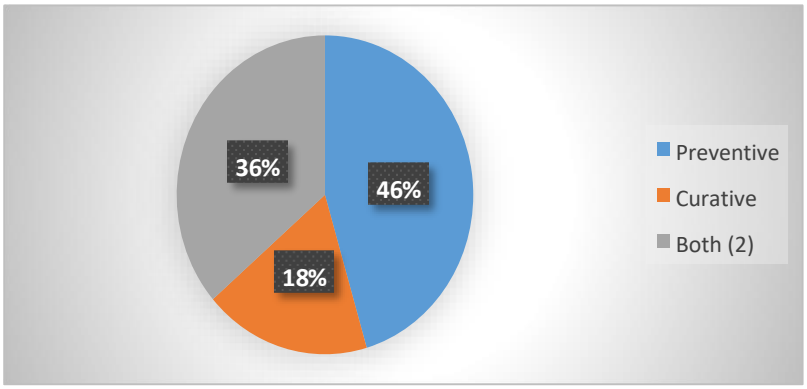

Figure 8: Breakdown of reasons for using antibiotics

How antibiotics are procured (Figure 9)

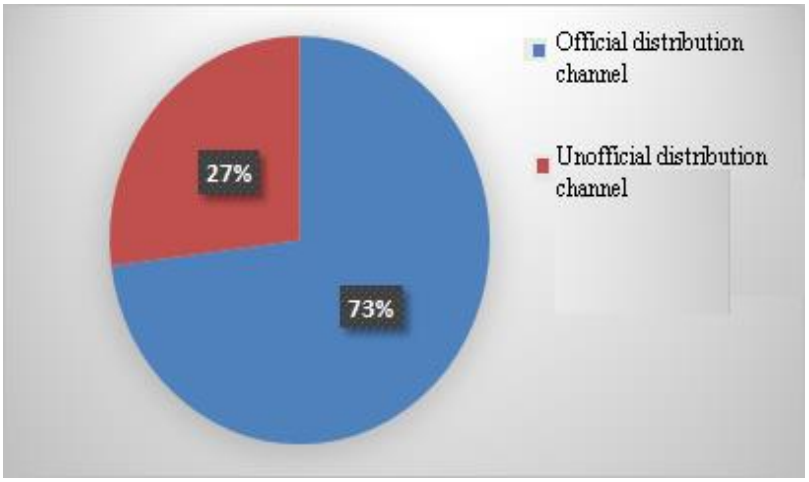

Figure 9: Proportion of antibiotic procurement methods

DISCUSSION:

In the course of this study, we described the use of antibiotics on laying hen farms in Kindia, precisely in the sub-prefecture of Friguiagbé.

The most widely marketed antibiotic molecule is tetracycline (83.63%). This result is in line with that of in France, which revealed that Tetracyclines represent the most widely used family of antibiotics in poultry. However, during our research, we observed that these molecules are generally preserved at environment temperature[7].

A large proportion of the stakeholders represented by poultry farmers (91%) asked animal health agents to administer the drugs, compared with 9% who administered the drugs themselves. Contrary observations were made during a study in Algeria, revealing that 90% of poultry farmers administer the drugs prescribed to them, compared with 10% who do so themselves[8]. Furthermore, the majority of poultry farmers (91%) call on an animal health agent as soon as symptoms appear in an animal, compared with 9% who call on them if the first treatment fails.

With regard to the prescribed withdrawal period, a large proportion of poultry farmers in the study complied with the antibiotic withdrawal period. This result is consistent with that of (Zamoum, 2019) in Algeria, who found that the notion of a waiting period was respected by 83% of farmers[1]. This would depend on the level of education and knowledge of stakeholders of the effects (risks) caused by antibiotic residues in foodstuffs of animal origin. Similarly, ignorance and neglect of the dangers of improper storage lead farmers (73%) to keep medicines in stockrooms, while only a small proportion keep their stocks of products in refrigerators.

Bacterial diseases commonly encountered in the field by animal health workers include Salmonellosis (43%), Colibacillosis (14%) and Mycoplasmosis (7%). In the communes of Abomey-Calavi, Allada and Zè, rates of 36.67% cases of salmonellosis, 20% cases of colibacillosis and 30% cases of mycoplasmosis have been encountered by other authors[9]. Inadequate hygienic measures on farms and unsatisfactory animal feed are thought to be at the root of these high rates. Clinical examination is the most widely used diagnostic method. The absence of laboratories and the high cost of laboratory examinations in the study area lead to daily recourse to clinical examination; as a result, agents use antibiotics by trial and error. An inventory of antibiotics based on their frequency of use was carried out. This shows that the most frequently used antibiotics are Tetracolivit and Oxytetracycline (26%); Neoxyvital (13%); Alfaceryl and Pteryl (8%); Limoxin (5%); Enrofloxacin, TTS, Colisol and amoxillin (3%). This high percentage of use of oxytetracycline and Tetracolivit would be due to their sale price, waiting time and broad spectrum of activity. This result corroborates that of (Faye, 2022) in Dakar, who revealed that the antibiotics most commonly used in egg-laying speculation are those of the Tetracycline family, followed by Quinolones, Sulfonamides, Polypeptides and Betalactamines. Animal health workers surveyed in this research use these drugs for preventive (46%) versus curative (18%) reasons, or for both preventive and curative reasons (36%). This result differs from that of (Faye, 2022) in Dakar, who revealed that 39% of laying hen farms surveyed in his study used antibiotics to treat an existing disease[10].

Antibiotics are most commonly purchased from veterinary pharmacies (73%), as opposed to non-state-authorized parallel sales (27%). This result is close to that of (Dosso et al., 2014), which states that the majority of farms (63%) obtain their supplies from both the official and informal veterinary medicine distribution circuits[11].

CONCLUSION

In this study, we noted that the prefecture of Kindia remains one of the most important areas for the breeding of laying hens in the Republic of Guinea. In addition to identifying the various bacterial diseases prevalent in the area, we were also able to determine which antibiotic molecules are frequently used, by whom, why and under what circumstances. The observations raised during the course of the survey should attract the attention of all those involved in the poultry industry.

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