

## CROSS-SECTIONAL STUDY OF COLIBACILLOSIS IN PORTUGUESE RABBIT FARMS

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### ABSTRACT

A cross-sectional study was carried out between 2007 and 2011 in Portuguese rabbit farms to investigate farm characteristics related to colibacillosis. In seven (17.1%) farms, one or more animals were positive to *E. coli*. All positive farms were from the North of Portugal. Five positive (71.6%) farms had less than 900 female's rabbits, and 2 positive (28.6%) had more than 900 females. In six positive farms (85.7%), ammonia levels were less than 5 ppm and four (57.1%) farms had humidity levels between 55% and 80%. This study provides preliminary data in colibacillosis in farms. Differences were observed between the farms. More extensive investigations are required with multiple farms and replicates to confirm our findings and assess the role of each of these factors.

**Key words:** Rabbits, colibacillosis, farms, portugal

### INTRODUCTION

Gastrointestinal disorders in rabbits generally appear due to a variety of conditions that include bacteria, viruses, protozoa, nutrition and husbandry (Okerman, 1994; Rosell, 2000). All mammals and birds are colonized by *Escherichia coli*, generally at birth, and these organisms become a permanent part of the normal microflora of the gastrointestinal tract (Oswald *et al.*, 2000). Low levels of *E. coli* are normally present in the gut of healthy rabbits (Peeters *et al.*, 1988). Colibacillosis caused by Enteropathogenic *E. coli* (EPEC) is an infectious disease of major economic importance in the rabbit industry and may have a high incidence and mortality.

Diarrhea in weaned rabbits is frequently caused by strains of these *E. coli* (Rycke *et al.*, 1997). EPEC represents a major cause of lethal diarrhea in young mammals and have been reported, mainly in European countries, to be frequently isolated from diarrhea outbreaks in commercial rabbit farms (Peeters, 1993; Blanco *et al.*, 1997). The bacteriological diagnosis is made through the isolation and identification of the agent and allows the imposition of treatment on farms (Boucher and Nouaille, 1996). The present study was initiated in response to concerns about the occurrence of the disease in the North and Center of Portugal in order to discern its economic impact, and to prioritize the allocation of disease control resources.

The objective of this study was to investigate if farms characteristics could be determinants to colibacillosis occurrence.

### MATERIALS AND METHODS

A cross-sectional study was conducted in Portugal from January 2007 to April 2011 in two geographical areas (North and Center). The unit of interest in this study was the individual rabbit farm, defined as any premise where at least 40 rabbits were reared. The farms were selected on the basis of

convenience of location and the owner's willingness to participate. Our target population comprised these rabbit farms in the two study areas. A farm was considered as positive if one or more animals were positive to *E. coli* by culture during the study period. When a suspected rabbit was found on a farm, the animal was sent to an independent laboratory for microbiological culture. On each farm, characteristics were recorded.

## RESULTS AND DISCUSSION

A total of 41 rabbit farms were studied. The majority of the farms (n=33; 80.5%) were located in the North of Portugal. Thirty farms (73.2%) had less than 900 females, ten (24.4%) had 900 or more females and 1 farm had only male rabbits. In 95.1% of the farms (n=39) ammonia levels were less than 5 ppm (parts per million) and in 61% (n=25) humidity levels was between 55% and 80%. Only five farms (12.2%) reported weight loss. Frequency of colibacillosis in farms is summarized in Table 1. In seven (17.1%) farms, one or more animals were positive to *E. coli* by culture as indicated by the independent laboratory. All positive farms were from the North of Portugal. Five positive (71.6%) farms had less than 900 female's rabbits, and 2 positive (28.6%) had more than 900 females. In six positive farms (85.7%) ammonia levels were less than 5 ppm and four (57.1%) farms had humidity levels between 55% and 80%.

**Table 1:** Frequency of colibacillosis in farms.

Farms' characteristics	N	%
Location		
North	7	100
Center	0	0
Female's number		
Less than 900 females	5	71.4
More than 900 females	2	28.6
Ammonia levels		
Less than 5 ppm	6	85.7
5 ppm or more	1	14.3
Humidity levels		
55% - 80%	4	57.1
Others levels	3	42.9

The proportion of positive farms in relation to the number of farms examined was very high. The value is in agreement with previous studies, who finds that colibacillosis is a frequent disease in European rabbitries (Gallois *et al.*, 2008). Colibacillosis, is a complex problem due to the difficulties of differential diagnosis with other digestive disorders and treatment. Resistance is common where antibiotics are heavily used. The diagnosis is based on the epidemiology, bacteriology, and lesions (histological) (Boucher and Nouaille, 1996). Due to the low cost of the rabbit, the veterinarian often is not called. The disease occurs equally in large units and in smaller units (Okerman, 1994). In this infectious process, rabbit producers, technicians and veterinarians needs to work together and have a good monitorisation of the situation to control the disease (Boucher and Nouaille, 1996).

## CONCLUSION

Colibacillosis is an important cause of enteric pathology in rabbits. This study provides preliminary data in colibacillosis in farms. Differences were observed between the farms. More extensive investigations are required with multiple farms and replicates to confirm our findings and assess the role of each of these factors.

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