

TECHNICAL NOTE : THE MEASUREMENT OF SOFT FAECES PRODUCTION IS AFFECTED BY THE TYPE OF COLLAR

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ABSTRACT : The present study aimed to compare two types of plastic collar, either a rigid and flat one or a flexible and conical one, for collecting soft faeces. Measurements were performed in two successive series (separated by 5 days) on a group of 10 hybrid adult rabbits (mean live weight = 3590 g) fed *ad libitum* a commercial pelleted diet. Rabbits equipped with a flat collar showed a slightly

higher (not significant) feed intake, and a higher hard faeces excretion (+ 10%). The quantity of soft faeces collected was 20% higher ($P=0.05$) in rabbits wearing a flat collar, compared to a conical one (resp. 28.2 vs 22.0 g dry matter/day). The use of a flat and rigid collar instead of a flexible one is recommended to obtain a more accurate total collection of soft faeces in adult rabbit.

RESUME : Cet essai a pour but de comparer la quantité de cœcotrophes collectés, chez des lapins portant soit un collier flexible et conique, soit un collier plat et rigide. Les mesures ont été effectuées en 2 séries successives séparées de 5 jours sur un groupe de 10 lapins hybrides adultes (poids vif moyen=3590g), nourris à volonté avec un aliment granulé du commerce. Les lapins portant un collier plat présentent une ingestion légèrement

supérieure (non significatif) et une plus forte excrétion de fèces dures (+10%). La quantité de cœcotrophes collectés chez les lapins portant un collier plat est 20% plus forte que celle des mêmes lapins portant un collier conique (resp. 28,2 vs 22,0 g de matière sèche par 24h; $P=0,05$). Il est recommandé d'employer un collier plat et rigide pour obtenir une collecte totale de cœcotrophes chez le lapin adulte.

INTRODUCTION

The phenomenon of caecotrophy is a specific feature of the digestive physiology of the rabbit (CARABAÑO and PIQUER, 1998). It is a part of the "food" intake, reaching about 20 g DM in the adult rabbit, that correspond to about 20 % of the total protein intake, provided by feed and soft faeces (GIDENNE and LEBAS, 1987). Therefore it must be evaluated, particularly for ileal digestibility measurements in adult rabbits, where it is necessary to evaluate precisely the total intake of each animal (GIDENNE et al., 1994, CARABAÑO and MERINO, 1996).

Until now, the only procedure to estimate individual soft faeces production consisted of installing a collar on the animal to prevent soft faeces ingestion. The measurement of the soft faeces excretion seems easy, provided the animal would not be overly stressed when wearing the collar. However, the literature shows that the amount of soft faeces excreted is highly variable, even when experimental conditions (animals, feeds...) are very similar, for example when performing a ring-test (GIDENNE *et al.*, 1994). Some other factors could thus affect this measurement, such as the type of collar. The literature mentioned several types of collars used for this purpose, either flat or conical collar, either in wood or plastic. Thus, the aim of the present study was to compare two types of plastic collars, flat or conical, on the measurement of soft faeces excretion in the adult rabbit.

MATERIAL AND METHODS

Shape of the two types of collars (figure 1)

The conical collar (type : C) was made out of flexible Plexiglas (1 mm thick). Out of the neck of the animal, the collar has a flat form, with an external diameter of 27 cm. When it is mounted on the rabbit's neck, the mean external diameter is about of 19 cm, and the shape of the collar was similar to a cone (figure 1). The collar weighed 65 to 75 g.

The flat collar (type F) was made out of rigid polypropylene (2 mm thick). The mean external diameter averaged 25.5 cm, and it weighed 95 to 100 g.

Soft faeces collection

In a first period of measurement, each type of collar was randomly allocated to five adult rabbits (mean live-weight = 3590 g). In a second period (5 days later), the type of collar was exchanged. Rabbits were kept in individual metabolism cages throughout the experiment, and they were fed *ad libitum* a commercial pelleted diet.

Before the measurement of soft faeces excretion, rabbits were previously adapted with the collar for half a day. Two days afterwards, the rabbits were equipped with a collar for 24h and the quantity of soft faeces excreted was measured.

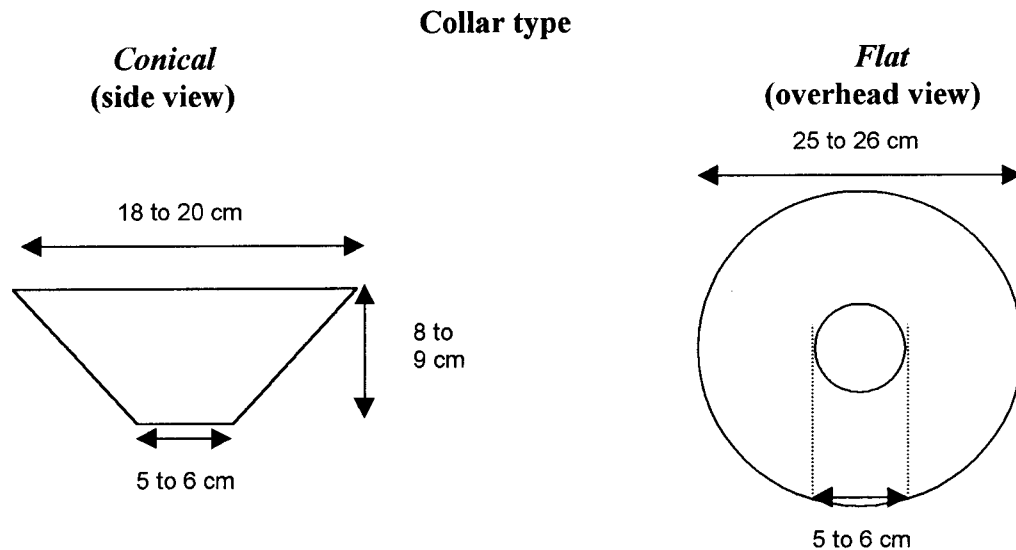


Figure 1 : Shape of the conical and flat collar, for adult rabbit (weight : 3-5 kg).

A statistical analysis was performed according to a bi-factorial GLM procedure (SAS, year) to examine the effect of the type of.

RESULTS AND DISCUSSION

Rabbits equipped with a flat collar showed a slightly higher (not significant) feed intake, and a higher hard faeces excretion (+ 10%, table 1). This could be ascribed to the fact that, compared to the conical collar, the flat collar allowed an easier access to the feeder for the rabbits.

The measurement of the soft faeces excretion was significantly affected by the type of collar (table 1). Rabbits wearing a flat collar excreted about 20% more soft faeces ($P=0.05$), compared to those equipped with a conical collar. The ratio of soft to hard faeces was not affected significantly, although this was numerically higher (+15%).

The conical and flexible collar was initially employed to obtain a light collar, more comfortable and thus less stressful for the animals, particularly for young rabbits (GIDENNE and LEBAS, 1984). It also reduced the

adhered to the cage floor, although it also made it more difficult to access to the feeder. Although not observed effectively, we suppose that a conical collar probably allowed some possibilities (because of its flexibility) for an adult animal to bend (with effort) and thus to pick up some soft faeces at the anus.

The flat collar allowed the rabbit to pick up some caecotrophes that stuck to the floor. However, this inconvenience appeared to be very weak compared to the advantage of the rigidity of such a collar which avoided any possibilities for the rabbit to bend towards its anus. This would explain the differences found here for caecotrophe production between these two types of collars. Although the flat rigid collar was heavier and wider, compared to the conical one, it did not appear stressful to an adult rabbit.

In conclusion, we recommend to use a flat rigid collar instead of flexible one, to obtain a more accurate total collection of soft faeces in adult rabbits.

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Table 1 : Effect of the type of collar on the measurement of the soft faeces excretion

Type of Collar	Feed intake (g/day)	Excretion (g dry matter/ day) of		Ratio Soft / Hard, %
		Hard faeces	Soft faeces	
- Conical	198	65.9	22.0	33.8
- Flat	216	76.2	28.2	39.7
RMSE	29.0	4.7	5.7	8.6
P level	0.19	0.011	0.05	0.20

possibilities for the rabbit to pick up soft faeces that

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