INTELLIGENT CAGE FOR GROWING OR ADULT MALE PET RABBITS

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ABSTRACT

Nowadays animal welfare is becoming a major concern for society. Pet rabbit breeding is expanding in Brazil and no type of enclosed environment that provides comfort and welfare for these animals is available. If loose, rabbits can dig holes, chew on furniture, eat plants and urinate/defecate in inappropriate places. This paper describes the development of an enclosed environment (intelligent cage) for growing or adult male rabbits and presents results from a study of their behavior. The cage was built with dimensions 0,90 x 0.78 m (0.70 m^2). For environmental enrichment, a PVC pipe, a platform, a wood swing, a hanging plate, some dangling chains and a place for treats were added. The cage was set 1.20m above the ground, with a bottom easily sliding out tray o allow cleaning and scrubbing when needed. A camera with infrared light was used to monitor the animals for 24 hours for 50 minutes periods during seven days so that all 24 hours were registered. A Fuzzy Lop male was observed every 30 seconds, with a total of 2400 records. To observe the animal's preference in the cage, eight separate locations were named and eighteen different types of behavior were considered. For statistical analysis, each six-hour shift (00:00-06:00, 06:00-12:00, 12:00-18:00 and 18:00-24:00) was considered as treatment and each week day consisted of a replicate. A high frequency of playful and exploratory behavior was observed in addition to interaction with environmental enrichment. The most frequent behavior was to lie down (41.47%) and the most popular places in the cage were: the sides of the cage (61.70%) and treat region (12.58%). Considering the shifts, a higher incidence of licking/scratching behavior was observed in the morning (06:00-12:00). The animals moved around, more frequently, during the morning (00:00-06:00) and evening (18:00-24:00) and gnawed the cage bars more frequently in the morning (00:00-06:00), probably due to the expected human presence. Studies with intelligent cages should be improved to provide greater comfort and convenience for the animals.

Keyword: Pet rabbits, welfare, rabbit breeding

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Introduction

Research evaluating the behavior and welfare of rabbits are very important to ensure the improvement of life in environments different from the natural habitat. In Brazil, these studies are recent. Barros et al. (2012), realized that environmental enrichment improved play behavior and reduces the incidence of fights. Heker (2013) found that young rabbits with tactile stimulation perform more activities, are more cooperative and docile , show less fear and deal easier with new situations. Rabbits respond well to external stimuli as well as the introduction of environmental enrichment.

In Brazil the use of rabbits as pets has grown, with shortages of specific materials and equipment. If kept loose the rabbits dig holes, chew furniture, can eat poisonous plants and urinate / defecate in inappropriate locations. Moreover, there are no cages suitable for rabbits in the Brazilian market that provides space and activities, this contributes to laziness, therefore the development of new technologies in this area, becomes essential (Machado, 2012).

152

Objective

This paper aimed to develop and evaluate a cage for growing or adult male rabbits which associates comfort and welfare as well as identifies the behavior of the animal in these conditions.

Material e Methods

The intelligent cage was built with internal dimensions of 90 cm x 78 cm x 50 cm. For environmental enrichment, a steel chain, an enameled plate and wooden swing, a raised platform, a basket to offer hay, a place for treats and a PVC pipe of 150 mm diameter for hiding were added. The cage was placed on a steel base with 120 cm of height with a tray lined with sawdust to collect excreta. Observations of behavior were made in a restricted room at IFMG -. Campus Bambuí, Brazil, from June to July 2013 The room temperature recorded was 26.9 ° C (maximum) and 11.7 ° C (minimum). To ensure the brightness of the room, the windows were opened during the day. To monitor the behavior of the rabbit an infrared camera (with night vision) was

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installed. A year old Fuzzy Lop male was the subject of the research. Daily, three periods of 50 minutes each were evaluated for eight days, totaling 24 periods. The views were made every 30 seconds, resulting in 100 views per period giving a total of 2400 views. The regions of the cage considered were: feeder / drinker, inside the pipe, side of the cage, treat area, on the platform, beneath the platform and toy area. The behaviors considered were: walking, playing with the chain, playing with the swing, running, drinking, gnawing the cage, the pipe, binky (happiness leap), standing, stretching, sniffing, having treats, cecotrophy, digging the cage, eating, lying, licking/scratching and siting.

The day was divided in four periods, from 00:00-06:00, 06:00-12:00, 12:00-18:00 e 18:00-24:00. The data was evaluated descriptively and comparisons were made between the four shifts considered, using the resources of the computer program MINI TAB, with comparisons made by the nonparametric Kruskal Wallis and Mann Whitney tests.

153

Results e discussion

The most frequent behaviors were lying and siting, which shows that mosto f the time, the rabbit remained at rest, this result was also observed by Gunn e Morton (1995) that found 56% of inactivity. It was found that the animal stayed on top of the platform hen he licked himself. A behavior that suggests stress or anxiety, gnawing on the cage/pipe, was observed only at 0,80% of the time, which may suggest that there is satisfaction of the animal in relation to the environment, this value, was considerably lower than the one observed by Schepers et al. (2009), which was of 17%.

Attention is drawn to the high frequency of "binky", behavior which suggests sufficient space for the act. Exploratory behaviors such as sniffing the environment and standing were observed in 2.84% which suggests high curiosity of the animal in relation to the environment. It was noticed that there was a great variety of behaviors in the intelligent cage.

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Table 01 - Fuzzy Lop rabbit behavior in smart cage

behavior	(%)	behavior	(%)	behavior	(%)
Walking	1,66	Sniffing	2,27	Stretching	0,66
Playing with chain	0,21	Eating treats	3,05	Standind	0,57
Playing with swing	0,11	Cecotrophy	0,08	"Binky"	0,21
Playing with plate	0,04	Digging the cage	0,04	Lickimg	30,38
Drinking	0,26	Eating	3,13	Siting	14,87
Gnawing cage/pipe	0,80	Lying	41,47	Running	0,19

Regarding the shifts, significant differences (P <0.05) were observed in some behaviors. The animal has lower frequency of licking / scratching behavior in the 18:00-00:00 period, he walked more in the morning (06:00 to 12:00) and evening (18:00-00:00) and bit more the cage / pipe in the period 06:00 to 12:00, this might have occurred due to anxiety, waiting for human presence to open the windows, the rabbit presented restlessness after his presence.

154

The area most frequented by the animal was the side of the cage (61.70%), but one must draw attention to the time the animal spent on the platform (13.53%) licking himself. The region of toys was visited 2.11% and the animal remained in the pipe only   in 0.90% of views. Significant difference was observed between shifts in relation to the toy region, in the afternoon (12:00 to 18:00) the rabbit did not use this area, probably because it is a time to rest, which results in less activities. It was noticed that the rabbit explored every area of the intelligent cage, but showed preference for the sides of the cage.

Conclusions

The way in which the cage was built contributed to the rabbit's interaction with the structure as well as environmental enrichment, a great variation in exploratory behavior and entertainment was observed. Furthermore, the rabbit visited every area of the cage, showing preferences for the sides.

 Other studies need to be done to better understand the behavior of these animals in environmental friendly conditions.

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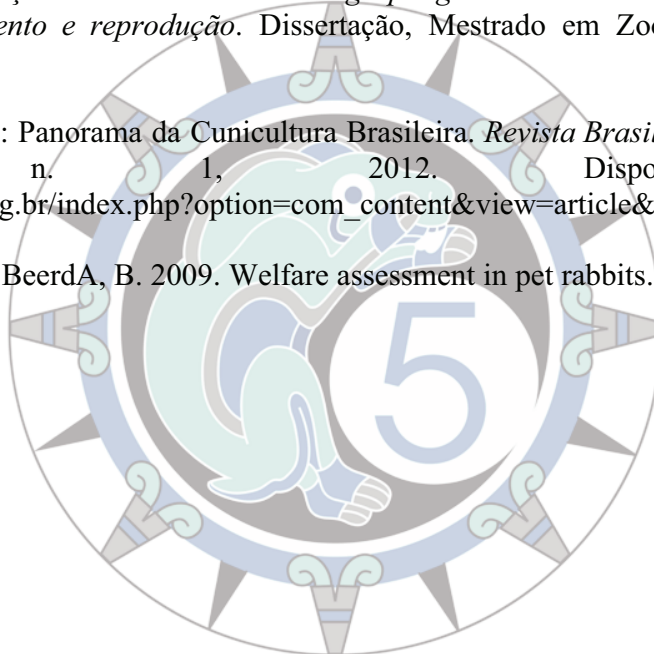
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155