EFFECT OF HANDLING IN PRE-WEANING RABBITS

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ABSTRACT

Fear is an emotion that may negatively affect rabbits’ welfare, as a consequence of bad handling during the rearing period. A number of recent researches suggests that a certain level of gentle handling in the pups, scheduled very accurately, can reduce the fear stress of the animals towards new environments and humans. The fear response may be reduced by handling around nursing time during the first week after birth. The aim of this study was to investigate the effects of regular daily handling on weight gain and on the fear reaction towards a new environment and towards human beings in domestic rabbit pups. We obtained different results between handled pups and control pups in the emergence test and in the immobility test. In fact we found that a minimal human contact applied before nursing reduced the fear of humans in rabbit pups. Our handling method, requiring minimal contact, can be used to reduce fear and improve welfare in rabbits. Furthermore, the short length of the handling procedure allows stockpersons to produce tamer rabbits, which could have a better reproductive and productive capacity due to reduced stress levels.

Key words: Young rabbits, Handling, Body weight, Behavioural test.

INTRODUCTION

A number of recent studies have indicated that the type of handling may influence behaviour and human-animal relations in terms of approachability and fear of humans in different species of farm animals like pigs (Tanida et al., 1994), sheep (Mateo et al., 1991), cattle (Boivin et al., 1994) and rabbits (Anderson et al., 1972; Kersten et al., 1989; Jezierski and Konecka, 1996; Pongrácz and Altbäcker, 2003; Verga et al., 2004). Although one of the main goals of the domestication process is to eliminate unnecessary high fear responses (Price, 1984), domesticated animals still show avoidance towards human beings (Rushen et al., 1999). In rabbit pups, even minimal human contact is effective at reducing avoidance of the caretaker and handling might, thus, be a useful tool to reduce stress and improve welfare even under intensive farming conditions (Csatádi et al., 2005).

Hudson et al. (1996) showed that minimal handling reduces tidimity, particularly when performed during the first week of post-natal life. Pongrácz and Altbäcker (1999) found that the behaviour and welfare of caged rabbits can be positively affected by repeated handling performed by familiar people and that the pups become fearless of humans only if they have been handled close to the time of the maternal visits. Bilkó and Altbäcker (2000) showed that the first week postpartum is a sensitive period for successful handling.

During early life of rabbits there are certain short periods, linked to nursing, when they can learn extremely fast; thus the rabbits’ fear of humans decreased if they were handled (touched by the hand) during the first week of their life (Bilkó et al., 1994). Similarly, Verga et al., (2004) found that handling in early life significantly affected rabbits’ reactivity in behavioural tests. Csatádi et al. (2005) studied the effects of minimal human contact on New Zealand White kits: handling could reduce rabbits’ fear responses towards humans if it was performed during the sensitive period of the pups.
The aim of this study was to investigate the effects of regular daily handling in domestic New Zealand White rabbit pups, during the first week after birth, on their fear reaction towards human beings.

**MATERIALS AND METHODS**

The trial was carried out in a commercial rabbit farm, in the North-West of Italy (Lombardia Region), equipped with an air control temperature system. Thirty-four commercial hybrid rabbit does were used. The weaning of the pups was at the age of thirty-three days. Each cage was equipped with a feeder and a nipple drinker; feeding (commercial diet) and water were administered *ad libitum*. We used 34 litters (9 pups each aged 5 days): half were handled and the others were not (control group).

The handling procedure was the following: handling was performed daily for seven days starting on the day of birth, immediately before nursing; always the same experimenter (worker of the animal house) introduced one hand into the nest box, near the litter but without touching the pups, for one minute. The following productive traits were recorded:

- the weight gain during the pre-weaning period;
- the fear of a new environment and of humans, using two specific behavioural tests: emergence test (ET) and immobility test (TI) (Hansen *et al.*, 1993; Ferrante *et al.*, 2005).

The litters were weighed at the age of 5 days while at 14 and 33 days of age the pups were weighed individually.

During the emergence test, the rabbit was placed in a start wooden box (50x52x60), closed by a lid, with a sliding door leading into the arena. The experimenter stood behind the start box, outside the visual field of the rabbit and after one minute opened the sliding door to the arena. The parameters recorded were: the number of attempts of escaping (the number of times the rabbit put one or more legs or head outside the box before it emerged); emergence latency, in sec (i.e., time to enter with all the body into the arena). After the finished of ET the experimenter picked the rabbit up and performed a TI test. If a rabbit didn’t leave the box within three min, the test was stopped. Long latencies to approach and to enter a novel arena and few attempts to enter with one or more legs are considered indicators of high fearfulness (Miller *et al.*, 2005). In the TI test, the rabbit was laid on its back in a V-shaped wooden cradle and kept in this position by placing one hand on the animal’s hind-feet and the other one on its ears for 10 s. The pressure applied by the hands of the experimenter was proportional to the resistance offered by the rabbit to restraint. Then, hand pressure was gradually lifted so that, if the rabbit still moved, the induction was considered unsuccessful and another induction period of 10 s started, until movement ceased. While the rabbit was laying still with one or both legs extended, the experimenter slowly withdrew the hands and a chronometer was activated to measure the duration (in seconds) of the response, which ended when the rabbit resumed the upright position. If three inductions were unsuccessful TI was scored as 0 and the number of inductions was considered equal to 3. If TI lasted for more than 180 s the single test session was terminated and the duration of TI was considered 180 s. The number of inductions necessary to obtain a TI reaction was always recorded. Means and standard deviations were calculated for the recorded parameters.

**RESULTS AND DISCUSSION**

We found no difference among the two groups regarding their weight gain, in contrast to authors that have found (Jezierski and Konecka, 1996 in rabbits, Hemsworth and Barnett, 1991 in pigs) that handled animals grow better than unhandled ones. A possible explanation for this discrepancy is that our observation was restricted to only the period before the weaning, when animals are for a long time in the nest and they hardly see humans. That is, a lower food consumption due to fear may affect development only at a later age.

During the emergence test, carried out at the ages of 14 and 33 days (Figure 1), differences have been found in number of attempts and in latency time. During the first repetition, at the age of 14 days, the
control pups showed a stronger attitude in exiting the start box compared to the handled ones. On the contrary in the second repetition of the test, carried out at the age of 33 days, the handled pups took less time to leave the box. Thus the number of attempts of escaping in control rabbits increased in the second repetition of the test, while in handled ones decreased to zero.

<table>
<thead>
<tr>
<th>attempts at 14 days of age</th>
<th>latency at 14 days of age</th>
<th>attempts at 33 days of age</th>
<th>latency at 33 days of age</th>
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<tbody>
<tr>
<td>handled</td>
<td>control</td>
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Figure 1: Emergence test: number of attempts of escaping (means) and latency (means±s.d.)

The emergence test aims at evaluating the effect of different husbandry systems on the animals’ reactivity towards new environment (Erhard and Mendl, 1999). Handled pups did not explore as actively as control pups, during the first repetition; the positive effect of handling, which may reduce the fear towards the new environment, can be observed only during the second repetition. In fact, at 33 days of age, the handled pups showed lower time to enter the arena compared to the control ones. It may be that the effect of handling, to reduce the fear also in a new environment, comes later.

During the tonic immobility test carried out at the age of 14 and 33 days (Figure 2), differences were found in the numbers of inductions of tonic immobility as well in the duration of it. Pups handled showed more numbers of inductions and less tonic immobility duration than the control ones.

<table>
<thead>
<tr>
<th>inductions at 14 days of age</th>
<th>duration at 14 days of age</th>
<th>inductions at 33 days of age</th>
<th>duration at 33 days of age</th>
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<tbody>
<tr>
<td>handled</td>
<td>control</td>
<td>handled</td>
<td>control</td>
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Figure 2: Immobility test: number of inductions (means) and duration (means±s.d.)

These results, according to some authors (Ratner, 1967; Hansen et al., 1993; Ferrante et al., 2005), can be interpreted as a greater fear reaction towards human beings in the non-handled rabbits. In fact, Gallup (1977) and Jones (1986a,b) found that fewer numbers of attempts of induction and higher duration time in tonic immobility test were correlated to higher fear level.

Moreover, many studies (Jones and Faure, 1981; Kersten et al., 1989; Grigor et al., 1995; Bilkó and Altbäcker, 2000; Pongrácz and Altbäcker, 2003; Verga, 2004) emphasize that regular handling may reduce the level of fear towards human beings.

The methodology used in this research agreed to various authors. For example, Bilko and Altbäcker (2000) suggest that early handling results in an olfactory imprinting when pups may imprint the odour of humans. The learning occurs during in the sensitive period around nursing (Pongrácz and Altbäcker, 2003). As the developing olfactory system of rabbit pups is more sensible during the
maternal visits, handling should be more efficient if it is performed in this period but inefficient if it is performed out of the nursing time or after the first week postpartum (Csatádi et al., 2005).

CONCLUSIONS

Our results show that one minute of daily handling of rabbit pups produced different reactions in two behavioural tests: even a minimal human contact applied before nursing reduced the fear towards a new environment and towards of humans. This handling method, requiring minimal contact, can be used to reduce fear and improve welfare in rabbits. Furthermore, the short length of the handling procedure could allow stockpersons to produce tamer rabbits which could have a better reproductive and productive capacity.

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