

## **THE EFFECT OF AROMATIZED ENVIRONMENTAL ENRICHMENT IN PEN ON SOCIAL RELATIONS AND BEHAVIOURAL PROFILE OF NEWLY MIXED WEANERS\***

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### **Abstract**

The aim of this study was to determine the influence of the presence of aromatized environmental enrichment elements in pen for weaners in newly created groups on the daily behavioural profile and their social hierarchy (time taken to establish hierarchical relationships, aggression level). The subject of the study were 72 weaners. After weaning piglets coming from two different litters were joined together and later 6 animals were placed in two adjacent pens (1.6 m × 2.2 m). One of the pens was additionally supplied with an aromatized element such as a chew toy enabling weaners to play. The behaviour was recorded for 72 hours after weaning and for 24 hours 14 days after weaning and the creation of the groups. The study was repeated 6 times. The following data was gathered: duration of activity and, specifically, duration of feed intake, duration and frequency of fights, duration and frequency of interest in toy in groups where the toy was present, and finally duration of rest. The presence of an aromatized toy in a pen decreased the level of aggression in weaners in the first days after weaning. Suitable selection of features of an additional object enriching the environment of a pen after animal weaning may significantly contribute to mitigation of fighting and aggression during the establishment of social hierarchy.

**Key words:** environmental enrichment, welfare, aggression, weaners

One of the stages of shaping the social hierarchy of pigs in animal farm conditions is weaning of piglets. Most often breeders place a few farrows in one pen for economic reasons. Animals being separated from their mothers find themselves in a new situation feeling threatened, which potentiates aggression and aggravates fights for the position in the group (Keeling and Gonyou, 2001). Previous researches suggest that the enrichment of the breeding environment may improve the welfare

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level of pigs by enabling the expression of manipulative and exploratory behaviours (Beattie et al., 2000; Petersen et al., 1995; Arey, 1993). In spite of the multigenerational genetic selection the pig constantly shows an internal drive to explore (Fraser et al., 1991). In an environment poor in stimuli a strong drive to snout and ruminate is directed to other pigs in a pen (Kelly et al., 2000; Lyons et al., 1995) and its equipment (Lyons et al., 1995). This may lead to aggression and cannibalism (Beattie et al., 1995). In these conditions nibbling on the tails of other animals may occur more often (Scott et al., 2006; Van de Weerd et al., 2005). Apart from that, high frequency of behaviours directed to other pigs in an environment poor in stimuli has a negative influence on productivity results of pigs due to disturbances in food intake (Ruiterkamp, 1987). Pearce and Paterson (1993) noticed that pigs kept in an environment poor in stimuli showed higher reactivity in response to stressful stimulation than those remaining in an enriched environment. Likewise, pigs which were provided with elements enriching the environment displayed more calmness towards staff (Pearce et al., 1989). These observations suggest that providing pigs with elements enriching the breeding environment may decrease stress connected with various steps improving the quality of pork (Beattie et al., 2000).

The application of various forms of environmental enrichment is a continual subject of discussion (Scott et al., 2006). The main features which an enriching element should possess were established on the basis of research and are as follows: scent, chewability, susceptibility to deformation and destruction, and the possibility of masticating (Van de Weerd et al., 2003). The achievement of such results may be explained by the need of exploration as well as the need of search for food, especially significant for pigs (Fraser, 1984). From the first days of life young pigs begin to snout, bite, sniff and masticate elements of their environment in order to identify which of these elements is suitable for eating (Petersen, 1994). Providing an object suitable for masticating which engages the snout may cause a stimulation of exploratory and manipulative behaviours as well as a reduction in frequency of detrimental behaviours in pigs (Fraser et al., 1991). Instruments giving more possibilities of food intake may reinforce behaviours characteristic of this species and may further engage the animals (Young et al., 1994).

Since 91% of pig producers in the European Union keep their animals on partly or fully grated decks (Hendriks et al., 1998), there is a need for finding alternative forms of environmental enrichment which could be applied in given conditions (Scott et al., 2006). Presently, toys which are frequently used on farms include the following: a commercial Bite Rite that is an enlarged cone with four attached tubes designed for biting; a single tube suspended on a chain; two intersected tubes creating so called 'helicopter'; suspended straps of fabric; balls in various sizes; and many more. In the experiment carried out by Blackshaw et al. (1997) suspended toys were claimed to be fulfilling their purpose better since the free toys were quickly subject to be dirtied by animal excrements, were pushed out of pens, or fell under animal feeders, which to a large extent decreased their attractiveness.

The concern for the welfare of animals, in other words the concern for their mental and physical health contributed to the creation of the Commission Directive 2001/93/EC stating that when pigs are kept in groups measures must be taken to

prevent severe fighting by providing plentiful straw to the animals or other materials for investigation engaging the animals. This directive states that there is a need for the use of extensive quantities of enriching material. The results of the research conducted by Van de Weerd et al. (2003) indicate that scent is one of the most important qualities of an object successfully enriching pig breeding environment. Pigs are attracted by the scent of familiar food (Hafez, 1975) or an animal (Meese et al., 1975). It also serves a much more important role than appearance in the process of remembering in pigs (Cronney et al., 2003).

Therefore, the aim of this study was to establish the influence of the presence of additional aromatized elements enriching the environment of a pen for weaners in newly created groups on the daily behavioural profile and their social hierarchy (the time needed to establish hierarchical relationships, the level of aggression).

### **Material and methods**

Observations were carried out between March 2008 and December 2010 in the Experimental Station of the Department of Pigs of the University of Agriculture in Kraków. The subject of the study was a group of 72 piglets, crossbreeds of Polish Landrace (PBZ) and Polish Large White (WBP) weaned at 35 days of rearing. Each weaning was scheduled for approximately 1 p.m. After the moment of weaning piglets coming from two different litters were joined together and later 6 animals were placed in two adjacent pens (1.6 m × 2.2 m). One of the pens was additionally supplied with an aromatized element such as a chew toy enabling weaners to play. The toy was suspended at the height of 50 cm so as to enable weaners its full access. Aromatized chew toys were made of straps of fabric attached to a metal frame to which a perforated container with vanilla aroma was also attached.

Round-the-clock observations of behaviour were carried out with help of colour surveillance cameras equipped with infrared illuminators, which enabled nocturnal observation without the use of the building lighting or a time-lapse digital video recorder. The behaviour of weaners was recorded from the moment of group formation and placement of the animals in a pen over the consecutive 72 hours, i.e. during the establishment of hierarchical relationships. Observations inspecting the stability of the hierarchy were repeated 14 days after weaning. The study was repeated 6 times.

After the completion of the observations the recorded material was played and the behavioural analysis of weaners housed in pens with and without an aromatized toy was conducted. Ninety-six hours of 72 weaners' behaviour was analysed during the whole experiment.

During the observation the following data were collected:

- time and frequency of interest in the toy by particular animal,
- time and frequency of fights,
- time of food intake,

as well as duration of the rest phases including lying on the belly or on the side. Furthermore, production indices were recorded, such as:

- body weight during weaning,
- body weight a week and two weeks after weaning,
- daily gain in the period from weaning and group formation of weaners until the end of observation time.

Experimental pens for weaners were located in a traditional building, mechanically air-conditioned and heated to approximately 18°C. Bedding covered deck housing was applied where straw was used as bedding material. *Ad libitum* feeding with complete mixture was applied in accordance with Pig Feeding Norms (1993). The aggression level was determined on the basis of time and frequency of fights.

Behavioural data was subjected to statistical analysis by the method of non-parametric Mann-Whitney U test, using Statistica 8.0 PL data analysis software.

## Results

During the first 24 hours of observations it was recorded that the overall activity of weaners remained at a similar level in both the pen with an aromatized toy and in the one without any additional elements (Table 1). It was noted that the duration of feed intake and the resting time remained at a similar level in both study groups compared. Statistically significant differences were not noted in reference to the parameters being mentioned.

Table 1. The behaviour of weaners – first 24 hours of the experiment (24 h = 100%)

Type of behaviour	System of housing	
	pen with toy (n = 36)	pen without toy (n = 36)
Overall duration of activity (%)	32.59±3.89	33.85±4.84
Duration of feed intake (%)	12.18±2.36	11.27±2.65
Overall rest (%)	67.41±3.89	66.15±4.84
Lying on the side (%)	25.10 a±2.66	19.13 b±2.39
Lying on the belly (%)	42.31 a±2.72	47.03 b±2.45
Duration of fights (%)	0.36 a±0.09	0.64 b±0.15
Frequency of fights	27.33±8.24	35.33±9.03
Duration of interest in toy (%)	0.70±0.19	-
Frequency of interest in toy	16.17±5.51	-

a, b – averages marked with different letters are statistically significantly different from each other,  $P \leq 0.05$ .

The time of fights was significantly shorter in animals kept in the pens supplied with an aromatized toy in comparison to the weaners kept without the toy. Regarding the frequency of fights in the first 24 hours of observations no statistically significant differences were noted. However, the frequency was higher in the pen without the toy. The time and the frequency of interest in the toy appeared to be at the highest level during the previously mentioned 24 hours of observations in comparison to

consecutive days. Fights, being an example of social behaviour, were exceptionally intensive in the mentioned period. The interest in the aromatized toy was at the highest level during afternoon activity as well as before noon between 10 a.m. and 12 p.m., i.e. in the period of intense food intake.

A small increase in activity in both study groups was noted in the following 24 hours of observations in comparison with the previous 24 hours (Table 2). The duration of feed intake also significantly lengthened. The time of lying on the side as well as on the belly in both groups was similar in the second 24 hours, resulting in the loss of significance of differences occurring in the first 24 hours. The second 24 hours of observations showed that the duration of fights was shorter and their frequency decreased in both pens. Similarly to the first 24 hours, fights remained at a lower level in weaners from pens with the aromatized toy. The differences proved to be statistically highly significant ( $P < 0.01$ ).

Table 2. The behaviour of weaners – second 24 hours of the experiment (24h = 100%)

Type of behaviour	System of housing	
	pen with toy (n = 36)	pen without toy (n = 36)
Overall duration of activity (%)	34.73±3.21	35.65±4.92
Duration of feed intake (%)	16.34±3.27	14.06±3.72
Overall rest (%)	65.27±3.21	64.35±4.92
Lying on the side (%)	31.85±2.56	34.80±2.54
Lying on the belly (%)	33.42±3.12	29.55±2.49
Duration of fights (%)	0.23 A±0.07	0.46 B±0.11
Frequency of fights	16.00 A±7.35	30.67 B±6.49
Duration of interest in toy (%)	0.36±0.14	-
Frequency of interest in toy	9.08±3.18	-

A, B – averages marked with different letters are statistically highly different from each other,  $P \leq 0.01$ .

The duration and the frequency of interest in the aromatized toy were clearly shorter in the second 24 hours of observations in comparison to the previous day and were 0.36% and 9.08%, respectively.

In the third 24 hours weaners in both pens spent a little less time actively, simultaneously lengthening the time spent lying on the side in comparison to the two previous days (Table 3). The duration and the frequency of fights, similarly to the previous days of observations, were noted at lower levels in the pen with the aromatized toy, where the frequency of fights remained statistically highly significant ( $P < 0.01$ ), contrary to the duration of fights where only significant differences were noted ( $P < 0.05$ ).

The time of interest in the aromatized toy in the third 24 hours of observations decreased to the lowest level noted in the whole experiment (0.03% and 2.33%, respectively).

Table 3. The behaviour of weaners – third 24 hours of the experiment (24h = 100%)

Type of behaviour	System of housing	
	pen with toy (n = 36)	pen without toy (n = 36)
Overall duration of activity (%)	27.28±1.36	29.25±2.18
Duration of feed intake (%)	14.34±2.54	13.31±2.78
Overall rest (%)	72.72±1.36	70.75±2.18
Lying on the side (%)	57.34±3.83	57.11±3.47
Lying on the belly (%)	15.38±3.12	13.65±3.18
Duration of fights (%)	0.19 a±0.03	0.28 b±0.09
Frequency of fights	10.17 A±5.28	21.50 B±6.39
Duration of interest in toy (%)	0.03±0.03	-
Frequency of interest in toy	2.33±1.21	-

a, b – averages marked with different letters are statistically significantly different from each other,  $P \leq 0.05$ .

A, B – averages marked with different letters are statistically highly different from each other,  $P \leq 0.01$ .

Table 4. The behaviour of weaners two weeks after weaning (24h = 100%)

Type of behaviour	System of housing	
	pen with toy (n = 36)	pen without toy (n = 36)
Overall duration of activity (%)	34.68±3.24	37.47±5.36
Duration of feed intake (%)	15.42±4.18	15.00±3.92
Overall rest (%)	65.32±3.24	62.53±5.36
Lying on the side (%)	45.00±6.26	40.47±5.89
Lying on the belly (%)	20.32±4.12	22.05±4.72
Duration of fights (%)	0.05 A±0.03	0.10 B±0.43
Frequency of fights	4.45 A±2.26	9.25 B±4.35
Duration of interest in toy (%)	0.26±0.16	-
Frequency of interest in toy	5.27±4.32	-

A, B – averages marked with different letters are statistically highly different from each other,  $P \leq 0.01$ .

Table 5. Productive results of weaned piglets

Feature	System of housing	
	pen with toy	pen without toy
Average body weight during weaning (kg)	11.97±0.82	10.67±1.14
Average body weight two weeks after weaning (kg)	16.68±0.95	15.13±0.97
Average daily gain in the period of two weeks (g)	336.42±2.24	318.57±2.35
Average body weight gain in the period of two weeks (kg)	4.71±0.98	4.46±1.08

Observations conducted two weeks after weaning showed a reduction of the time spent fighting as well as its frequency in comparison to the first stage of observations (Table 4). Both parameters were at a lower level in pens supplied with the aromatized toy.

The supply of the additional, aromatized element in the pen did not significantly contribute to an increase in growth in groups with the additional element in the pen. The results in this aspect were similar and statistically insignificant (Table 5).

## **Discussion**

Weaning often combines stressful factors such as a sudden change of diet, a change in the living environment, disturbances in the mother-offspring relations, as well as a contact with unfamiliar weaners (Merlot et al., 2004). The placement of weaners from different farrows in one pen usually causes aggressive behaviours which are, however, necessary in establishing social hierarchy, where the most intense fights are observed in the period of the first two days from the moment of the new group formation (Keeling and Gonyou, 2001). Weaned animals show the highest number of aggressive behaviours leading to injuries and stress during the first few hours from weaning (Arey and Franklin, 1995). In the period of up to 8 hours from weaning an increase in the level of cortisol in the animal blood plasma occurs (Merlot et al., 2004).

The results of this experiment additionally showed that the presence of the toy in the pen influenced the behaviour of the animals in the group. The noted differences mainly pertained to the level of aggression described as the overall time and frequency of fights. In the following days of observations these parameters were at a lower level in the group with the toy than in the control group kept in the pen without the toy. The results obtained prove the point made by Pearce and Paterson (1993), who showed that toys (chains, fabric straps, tyres) given to pigs kept in pens with excessive density of animals significantly increased the number of exploratory behaviours, but did not influence the entire time spent actively. Our own study proves that particular dependence to a certain degree. The interest in the additional element in the pen decreased with each consecutive day of observations. However, the overall activity of weaners kept in the pen with the chew toy was slightly smaller. Van de Weerd et al. (2006) also noted low frequency of tail and ear biting (under 1%) in an environment supplied with additional elements. The same researchers suggest, however, that the sheer fact of keeping animals on a surface entirely covered with straw captures the attention of pigs and reduces aggression. The results of the research conducted by Scott et al. (2006) prove that additional environmental enrichment did not cause such a high level of interest in pigs as access to straw. Similarly, in our own study (Nowicki et al., 2007) a recorded decrease in aggression level occurred in a pen supplied with an aromatized ball as well as in a pen with an odourless ball in the afternoon hours on the first day after weaning as well as in the next 24 hours. This was contrary to the group kept in the pen without the toy, where a decrease

in the level of aggression was not recorded. This may suggest that social hierarchy was established more quickly in the pens supplied with additional elements and the presence of toys led to an easier adaptation to the new environment (Nowicki et al., 2007). Similar consequences of the installation of additional elements in pens were noted by Blackshaw et al. (1997). These authors indicated that hanging toys (the type of toy used in this study) are much more attractive compared to the free toys in that a free toy left on the floor of a pen may be dirtied by animal excrements discouraging pigs, whose sense of smell is highly developed, from engagement (Jones et al., 2000).

The influence of the scent of the toy on its attractiveness was noted by Van de Weerd et al. (2003). They noticed that a chewable object captured the attention of pigs to a certain degree and its attractiveness increased when the toy was additionally aromatized. The toy used in this study was both chewable and aromatized. Synergistic effects of both these properties, similarly to the experiment of Van de Weerd et al. (2003), determined a higher attractiveness of an additional element. Simultaneously, the authors of the experiment indicated that scent significantly influences the attractiveness of an object during the initial contact with it. It was also noticed, similarly to our own study, that scent is one of the most important features of an object determining its attractiveness on the first day of observations. Scent was not listed among features most capturing the attention of animals on the fifth day. This proves a decrease in the interest in an aromatized toy in comparison to an odourless toy as in our own study two weeks after weaning.

Since an incorrect level of enrichment may stimulate an animal or increase its motivation to certain behaviours, and at a later stage the incorrect level of enrichment may inhibit these behaviours (Mench, 1998; Day et al., 2001), it is important to determine which features of an additional element keep the animals interested. After a certain time animals lose interest in an additional object which limits its value as an environmental enrichment element (Day et al., 2002). It seems, however, that a strong interest in an element enriching the pen's environment at weaning may compensate for decreased interest in the object at a later time.

In our own experiment, the highest intensity of fights occurred most frequently in the period of the highest interest in additional elements. Most likely, the environmental enrichment facilitates the decrease in social pressure, which leads to a decrease in the levels of aggression (Newberry, 1995). This may further suggest that the aromatization of additional elements, especially in the period after weaning may be recognized as an extremely good way of improving their functionality. The decrease in frequency of fights and aggressive behaviour is connected with redirecting the activity of animals to the toy and may cause an increase in animal productivity. However, the results of our study do not support this argument.

To sum up, it must be pointed out that a suitable selection of features of an additional object enriching the environment of a pen after animal weaning may significantly contribute to mitigation of fighting and aggression during the establishment of social hierarchy. However, further study regarding the number of objects enriching the environment in larger groups is necessary.



## References

- Arey D.S. (1993). The effect of bedding on the behaviour and welfare of pigs. *Anim. Welfare*, 2: 235–246.
- Arey D.S., Franklin M.F. (1995). Effects of straw and unfamiliarity on fighting between newly mixed growing pigs. *Appl. Anim. Behav. Sci.*, 45: 23–30.
- Beattie V.E., O'Connell N.E., Moss B.W. (2000). Influence of environmental enrichment on the behaviour, performance and meat quality of domestic pigs. *Livest. Prod. Sci.*, 65: 71–79.
- Beattie V.E., Walker N., Sneddon I.A. (1995). Effects of environmental enrichment on behaviour and productivity of growing pigs. *Anim. Welfare*, 4: 207–220.
- Blackshaw J.K., Thomas F.J., Lee J.A. (1997). The effect of a fixed or free toy on the growth rate and aggressive behavior of weaned pigs and the influence of hierarchy on initial investigation of the toys. *Appl. Anim. Behav. Sci.*, 53: 203–212.
- Commission Directive 2001/93/EC of 9 November 2001 amending Directive 91/630 EEC laying down minimum standards for the protection of pigs (2001), Official Journal of the European Community, L12.2001.
- Croney C.C., Adams K.M., Washington C.G., Stricklin W.R. (2003). A note on visual, olfactory and spatial cue use in foraging behaviour of pigs: Indirectly assessing cognitive abilities. *Appl. Anim. Behav. Sci.*, 83: 303–308.
- Day J.E.L., Spoolder H.A.M., Burfoot A., Chamberlain H.L., Edwards S.A. (2002). The separate and interactive effects of handling and environmental enrichment on the behaviour and welfare of growing pigs. *Appl. Anim. Behav. Sci.*, 75: 177–192.
- Day J.E.L., Spoolder H.A.M., Edwards S.A. (2001). Straw as environmental enrichment: which properties do growing pigs find behaviourally rewarding? Proc. International Symposium of the C.I.G.R. Animal Welfare Considerations in Livestock Housing Systems, 2nd Technical Section, pp. 157–167.
- Fraser D. (1984). The role of behaviour in swine production: a review of research. *Appl. Anim. Ethol.*, 11: 317–339.
- Fraser D., Phillips P.A., Thompson B.K., Tennesen T. (1991). Effects of straw on the behavior of growing pigs. *Appl. Anim. Behav. Sci.*, 30: 307–318.
- Hafez E.S.E. (1975). Editor. The behaviour of domestic animals. Bailliere-Tindall, London, p. 301.
- Hendriks H.J.M., Pedersen B.K., Vermeer H.M., Wittmann M. (1998). Pig housing systems in Europe: Current distributions and trends. *Pig News Inform.*, 19: 97N–104N.
- Jones J.B., Wathes C.M., White R.P., Jones R.B. (2000). Do pigs find a familiar odorant attractive in novel surroundings? *Appl. Anim. Behav. Sci.*, 70: 115–126.
- Keeling L.J., Gonyou H.W. (2001). Social behaviour in farm animals. CAB International, pp. 147–157.
- Kelly H.R.C., Bruce J.M., English P.R., Fowler V.R., Edwards S.A. (2000). Behaviour of 3-week weaned pigs in Straw-Flow, deep straw and flat-deck housing systems. *Appl. Anim. Behav. Sci.*, 68: 269–280.
- Lyons C.A.P., Bruce J.M., Fowler V.R., English P.R. (1995). A comparison of productivity and welfare of growing pigs in four intensive systems. *Livest. Prod. Sci.*, 43: 265–274.
- Meese G.B., Conner D.J., Baldwin B.A. (1975). Ability of the pig to distinguish between conspecific urine samples using olfaction. *Physiol. Behav.*, 15: 121–125.
- Mench J.A. (1998). Environmental enrichment and the importance of exploratory behaviour. In: *Second Nature: Environmental Enrichment for Captive Animals*, Sheperdon D.J., Mellen, J.D., Hutchins M. (Eds.). Smithsonian Institution Press, Washington, DC, pp. 30–46.
- Merlot E., Meunier-Salaün M.C., Prunier A. (2004). Behavioral, endocrine and immune consequences of mixing in weaned piglets. *Appl. Anim. Behav. Sci.*, 85: 247–257.
- Newberry R.C. (1995). Environmental enrichment: increasing the biological relevance of captive environments. *Appl. Anim. Behav. Sci.*, 44: 229–243.
- Nowicki J., Kopyra M., Kłoczek C. (2007). The behavioural reaction of weaners to hanging toys: wooden ball and aromatized wooden ball – way to reduce aggression after mixing. *J. Cent. Eur. Agri.*, 4: 447–452.
- Pearce G.P., Paterson A.M. (1993). The effect of space restriction and provision of toys during rear-

- ing on the behaviour, productivity and physiology of male pigs. *Appl. Anim. Behav. Sci.*, 36: 11–28.
- Pearce G.P., Paterson A.M., Pearce A.N. (1989). The influence of pleasant and unpleasant handling and the provision of toys on the growth and behaviour of male pigs. *Appl. Anim. Behav. Sci.*, 23: 27–37.
- Petersen V. (1994). The development of feeding and investigatory behaviour in free-ranging domestic pigs during their first 18 weeks of life. *Appl. Anim. Behav. Sci.*, 42: 87–98.
- Petersen V., Simonsen H.B., Lawson L.G. (1995). The effect of environmental stimulation on the development of behaviour in pigs. *Appl. Anim. Behav. Sci.*, 45: 215–224.
- Ruiterkamp W.A. (1987). The behaviour of grower pigs in relation to housing systems. *Neth. J. Agric. Sci.*, 35: 67–70.
- Scott K., Taylor L., Gill B.P., Edwards S.A. (2006). Influence of different types of environmental enrichment on the behaviour of finishing pigs in two different housing systems. 1. Hanging toy versus rootable substrate. *Appl. Anim. Behav. Sci.*, 99: 222–229.
- Van de Weerd H.A., Docking C.M., Day J.E.L., Avery P.J., Edwards S.A. (2003). A systematic approach towards developing environmental enrichment for pigs. *Appl. Anim. Behav. Sci.*, 84: 101–118.
- Van de Weerd H.A., Docking C.M., Day J.E.L., Breuer K., Edwards S.A. (2006). Effects of species relevant environmental enrichment on the behaviour and productivity of finishing pigs. *Appl. Anim. Behav. Sci.*, 99: 230–247.
- Van de Weerd H.A., Docking C.M., Day J.E.L., Edwards S.A. (2005). The development of harmful social behaviour in pigs with intact tails and different enrichment backgrounds in two housing systems. *Anim. Sci.*, 80: 289–298.
- Young R.J., Carruthers J., Lawrence A.B. (1994). The effect of a foraging device (The 'Edinburgh Football') on the behaviour of pigs. *Appl. Anim. Behav. Sci.*, 39: 237–247.

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### **Wpływ aromatyzowanego elementu wzbogacającego środowisko kojca na relacje społeczne i profil zachowania warchlaków**

#### **STRESZCZENIE**

Celem badań było określenie wpływu obecności aromatyzowanego elementu (gryzaki) wzbogacającego środowisko kojca na dobowy profil zachowania oraz kształtowanie się relacji społecznych (czas ustanawiania zależności hierarchicznych, poziom agresji). Badania zostały przeprowadzone na 72 warchlakach. Po odsadzeniu, warchlaki pochodzące z dwóch miotów były ze sobą łączone i umieszczane w sąsiadujących ze sobą, identycznych kojcach, po 6 warchlaków w kojcu. Jeden z kojców został wyposażony w aromatyzowany element dodatkowy – gryzaki, co miało umożliwić zwierzętom zabawę. Dokonano rejestracji behawioru zwierząt doświadczalnych przez kolejne 72 godziny od odsadzenia i zestawienia nowych grup oraz przez 24 godziny po odsadzeniu i utworzeniu nowych grup. Doświadczenie wykonano w 6 powtórzeniach. Gromadzono następujące dane: czas trwania fazy aktywności, do której zaliczono czas pobierania paszy, czas i częstotliwość walk, czas i częstotliwość zainteresowania elementem dodatkowym. Zanotowano również czas trwania fazy odpoczynku. Obecność zapachowego elementu w kojcu nadającego się do zabawy wpłynęła na obniżenie poziomu agresji i ilości zachowań agonistycznych w pierwszych dniach po odsadzeniu i utworzeniu nowej grupy warchlaków. Odpowiedni wybór cech, którymi powinny charakteryzować się elementy dodatkowe wzbogacające środowisko chowu świń może istotnie wpłynąć na redukcję poziomu agresji i liczby walk w okresie ustanawiania zależności hierarchicznych. Tendencja ta jest trwała, ponieważ po 14 dniach od odsadzenia nadal obserwowano mniejszą ilość zachowań agonistycznych w grupie utrzymywanej w kojcu z elementem dodatkowym.