



A STUDY ON CROSS BRED (LARGE WHITE YORKSHIRE) PIGLET BEHAVIOUR FROM BIRTH TO WEANING IN THE HOT AND DRY AREAS OF KADAPA DISTRICT OF ANDHRA PRADESH

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ABSTRACT

An investigative study was carried out to observe the trends of various behaviours expressed by large white Yorkshire cross bred piglets during preweaning period (56 days). A total 30 piglets were considered for the study and the behaviours studied included agonistic, nose contact, belly nosing, tail biting, ear biting. The observations were made at regular intervals from 6 A.M to 6 P.M. daily till the period of weaning. Highest mean proportion (8.04%) of piglets had shown the agonistic behaviour at 6 A.M. and least (1.55%) was observed at 5 P.M. showing a significant difference between the observation periods ($P < 0.001$). Nose contact was observed with a range from 0.24% (at 8 A.M.) to 3.63% (at 5 P.M.) showing an increasing trend towards the evening. Maximum mean percentage of piglets were found to be nosing each other's belly at 8 A.M. (3.51%) and minimum percentage at 11 A.M. but significant differences ($P = 0.022$) were not observed between the hours. Highest percent of piglets expressed the behaviour of tail biting at 2 P.M. (5.42%) and least at 5 P.M. (0.18%) and values differed significantly ($P < 0.001$) between only few hours of study. Ear biting was observed in highest proportion of piglets at 8 A.M. (3.39%) and least at 2 P.M. (0.12%). The values were non significant between most of the hours except between very few hours of observation. These behaviours appeared to be highest either during morning or evening hours of the day and showed a variation from birth to weaning as the age advanced. All the behaviours between the weeks till the 8 week weaning period were found to be significantly different.

KEYWORDS: Social Interaction, Dominance, Hierarchy, Agonistic Behaviour.

INTRODUCTION

Pigs are social animals under free ranging and live in group. Social behaviours are easily distinguished from the other behaviours as the initiation of social behaviour involves two or more animals and their peculiar communications. It is been reported that within hours of birth, newborn piglets begin to form social dominance relationships with littermates and eventually a stable hierarchy is formed between them. Social interaction between different litters begins gradually from an early age. In piglets, socialization begins around the age of 5 weeks with conspecifics and at 14 weeks with other species. Piglet's social interaction may include agonistic behaviour, nose contact, belly nosing, tail biting and ear biting. These social interactions are also considered as abnormal behaviours of piglets. Naturally pigs are omnivorous opportunists and their foraging involves investigation by sniffing, rooting, chewing and many other [1]. Piglets when reared under Intensive housing system provides scanty or no opportunity for these activities and they develop abnormal behaviours. It has stated that pigs exhibit several abnormal behaviours which are an indicator of poor welfare [5]. In this context, an investigative study was conducted to observe the trend of social behaviours with respect to age and time exhibited by Large White Yorkshire Crossbred piglets during preweaning period.

MATERIALS AND METHODS

The behavioural pattern of piglets was studied for a continuous period of eight weeks (56 days) from birth to weaning by recording the behavioural traits at different hours in a day continuously from morning six AM to evening six PM at 60 minutes interval in the Department of Instructional Livestock Farm Complex, College of Veterinary Science, Proddatur, Andhra Pradesh. The study was conducted using total number of thirty Large White Yorkshire piglets from four litters housed in adjacent pens. The behavioural pattern of piglets was recorded using video camera in sequence way of recording behaviour [5] from outside the pen without interfering with the natural behaviour of the piglets during study period.

Various observations were recorded via all occurrence sampling procedure [5] viz., Agonistic behaviour included those behaviours associated with fighting, attempts to bite, attack other piglets; nose contact- one piglets nose comes in contact with another piglets body part; belly nosing was counted when a piglet places its snout on another piglets belly and moves upward and downward; tail biting-piglets placing other piglets tail in its mouth, chewing and biting; ear biting-biting or chewing another piglets ear pinna was considered as ear biting [2]. Further the data thus obtained was tabulated and subjected to suitable statistical analysis to arrive at conclusions.

Statistical analysis

The average number of animals exhibiting each behavior was computed week wise and hour wise to observe the

effect of age and time of day on each behavior during pre-weaning period. The proportion of each behavior was calculated from the obtained average and data was again transformed to meet the assumptions of normality and homogeneity, necessary for further statistical analysis. The transformed data was analyzed by General Linear Model one way Analysis of Variance. Tukey's Honest Significant Difference test was used to test the differences among the weeks and hours of each behavior. The trial version of Statistical Package for Social Sciences (SPSS) 20.0 was used for statistical analysis.

TABLE 1. Social Behaviour of Piglets during pre weaning age
(Weekly Mean percentage of piglets expressing Social behaviours \pm SE of mean)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Agonistic	2.78 \pm 1.19 ^b	6.31 \pm 0.42 ^a	5.40 \pm 0.48 ^{ab}	5.20 \pm 0.47 ^{ab}	4.76 \pm 0.56 ^{ab}	3.73 \pm 0.52 ^{ab}	4.68 \pm 0.56 ^{ab}	4.56 \pm 0.39 ^{ab}
Nose Contact	0.79 \pm 0.32 ^b	1.91 \pm 0.40 ^{ab}	2.62 \pm 0.30 ^a	1.63 \pm 0.46 ^{ab}	1.35 \pm 0.27 ^{ab}	2.26 \pm 0.50 ^{ab}	2.70 \pm 0.25 ^a	2.74 \pm 0.42 ^a
Belly nosing	1.15 \pm 0.44 ^b	1.03 \pm 0.20 ^b	2.42 \pm 0.37 ^{ab}	3.02 \pm 0.46 ^a	2.42 \pm 0.28 ^{ab}	2.22 \pm 0.33 ^{ab}	1.90 \pm 0.17 ^{ab}	2.22 \pm 0.34 ^{ab}
Tail biting	0.75 \pm 0.33 ^c	1.99 \pm 0.26 ^{ab}	2.34 \pm 0.34 ^a	2.26 \pm 0.35 ^a	2.10 \pm 0.23 ^{ab}	0.91 \pm 0.14 ^{bc}	1.31 \pm 0.28 ^{abc}	0.99 \pm 0.17 ^{bc}
Ear Biting	0.52 \pm 0.20 ^d	2.02 \pm 0.18 ^{abc}	2.18 \pm 0.14 ^{ab}	1.63 \pm 0.20 ^{abc}	1.15 \pm 0.18 ^{cd}	1.35 \pm 0.27 ^{bcd}	2.34 \pm 0.13 ^a	2.14 \pm 0.22 ^{ab}

^{a-d}Means sharing different superscripts in the same row differ significantly (Tukey's HSD)

TABLE 2. Social behaviours of piglets during the different hours of the day
Hourly percentage (Mean \pm SE) of social behaviours of piglets during pre-weaning age

	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm
Agonistic	8.04 \pm 0.72 ^a	4.05 \pm 0.80 ^{bcd}	2.62 \pm 0.68 ^d	6.31 \pm 0.72 ^{abc}	4.64 \pm 0.82 ^{abcd}	3.04 \pm 0.63 ^{cd}	3.04 \pm 0.57 ^{cd}	7.80 \pm 0.99 ^a	3.99 \pm 0.74 ^{bcd}	7.02 \pm 1.00 ^{ab}	4.05 \pm 0.81 ^{bcd}	1.55 \pm 0.45 ^d
Nose Contact	3.57 \pm 0.59 ^a	1.61 \pm 0.42 ^{abc}	0.24 \pm 0.17 ^d	2.80 \pm 0.59 ^{ab}	1.61 \pm 0.40 ^{abc}	2.32 \pm 0.43 ^{abc}	2.02 \pm 0.42 ^{abc}	1.55 \pm 0.38 ^{abc}	1.55 \pm 0.45 ^{abc}	1.07 \pm 0.37 ^{bc}	2.02 \pm 0.74 ^{abc}	3.63 \pm 0.60 ^a
Belly nosing	1.79 \pm 0.50 ^a	1.90 \pm 0.52 ^a	3.51 \pm 0.65 ^a	2.26 \pm 0.52 ^a	1.67 \pm 0.42 ^a	1.37 \pm 0.35 ^a	1.79 \pm 0.36 ^a	2.14 \pm 0.53 ^a	1.85 \pm 0.45 ^a	1.43 \pm 0.40 ^a	1.55 \pm 0.46 ^a	3.33 \pm 0.56 ^a
Tail biting	0.77 \pm 0.24 ^c	1.73 \pm 0.32 ^{bc}	0.36 \pm 0.14 ^c	0.89 \pm 0.25 ^c	1.07 \pm 0.28 ^{bc}	1.43 \pm 0.40 ^{bc}	1.43 \pm 0.37 ^{bc}	2.86 \pm 0.58 ^b	5.42 \pm 0.81 ^{bc}	5.42 \pm 0.36 ^{bc}	1.43 \pm 0.32 ^{bc}	0.18 \pm 0.10 ^c
Ear Biting	1.84 \pm 0.48 ^{ab}	1.07 \pm 0.34 ^{bc}	3.39 \pm 0.53 ^a	2.20 \pm 0.42 ^{ab}	2.14 \pm 0.41 ^{ab}	0.89 \pm 0.26 ^{bc}	1.13 \pm 0.32 ^{bc}	1.43 \pm 0.36 ^{bc}	0.12 \pm 0.12 ^a	2.02 \pm 0.37 ^{ab}	1.19 \pm 0.25 ^{bc}	2.56 \pm 0.42 ^{ab}

^{a-d}Means sharing different superscripts in the same row differ significantly (Tukey's HSD)

Piglets were found to be very active at early hours where the agonistic nature was found to be highest than the rest of the day. Mean percentage of piglets displaying agonistic behaviour at various hours of study differed significantly ($P < 0.001$) as shown in table 2.

Nose Contact

Highest percentage of piglets was observed nosing other piglets during week eight (table 1) and an increasing trend could be also noticed with the advancement of age. However, only week one differed significantly ($P = 0.003$) with week three, seven and eight. It was further noticed that, nose contact was pronounced at early and late hours of the day while, significant difference ($P < 0.001$) was seen between few hours of the study as represented in table 2.

Belly nosing

From the statistical analysis it was found that highest mean percentage of piglets expressed this behaviour at fourth week which, significantly differed ($P = 0.002$) with first and second week. During hourly observations, no significant difference ($P = 0.022$) was found between hourly mean proportions of piglets exhibiting belly nosing. Indeed, it was observed that piglets frequently nosed the bellies of their pen mates and was recorded highest around 8 A.M. Higher incidence of belly nosing was reported in pigs kept in indoor housing (3). Belly nosing tendency may be related to piglet's failure to adapt to the environment.

RESULTS & DISCUSSION

The ethological observations made in this study are presented in Table 1 and 2.

Agonistic behaviour: Incidence of agonistic behaviour was found to be highest during second week after birth as depicted in table 1. This behaviour was found consistent almost throughout the preweaning life except during the first week which significantly differed ($P = 0.012$) with second week. A study observed that agonistic interactions in piglets which are housed indoor increased with age [2].

Tail Biting

During the observation period of eight weeks, highest mean percentage of piglets were engaged in tail biting during third week and least during initial week. Significant differences ($P < 0.001$) were found between weeks as represented in table 1. Further, it was also seen that highest mean proportion of piglets of piglets were involved in this activity during 2 P.M. than during other time of the day and values differed significantly ($P < 0.001$) between few hours of study as presented in table 2.

Tail biting is one of the concern of welfare and is a cause of economic loss as the carcass of such tail bitten pigs are generally condemned and lack of bedding may be considered as one of the important cause of tail biting as also reported by (1).

Ear Biting

This behaviour appeared highest at seventh week and values differed significantly ($P < 0.001$) between weeks. During the day, it was observed that majority of the piglets were involved in ear biting at 8 A.M. Mean percentage values were non-significant ($P < 0.001$) between most of the hours except between very few hours of observation.

CONCLUSION

Agonistic behaviour was the major behaviour during their initial weeks which declined as age advanced. Social

behaviours were highest either during morning or during evening hours of the day except tail biting which was highest during afternoon. Age and time may influence piglets preweaning social behaviour. Hence behaviour varies with respect to age and time

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