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Indicators animal behavior in growing hybrid sows subjected to castration by biological immunization
Evaluación de indicadores productivos y comportamiento animal, en hembras híbridas sometidas a castración por inmunización biológica
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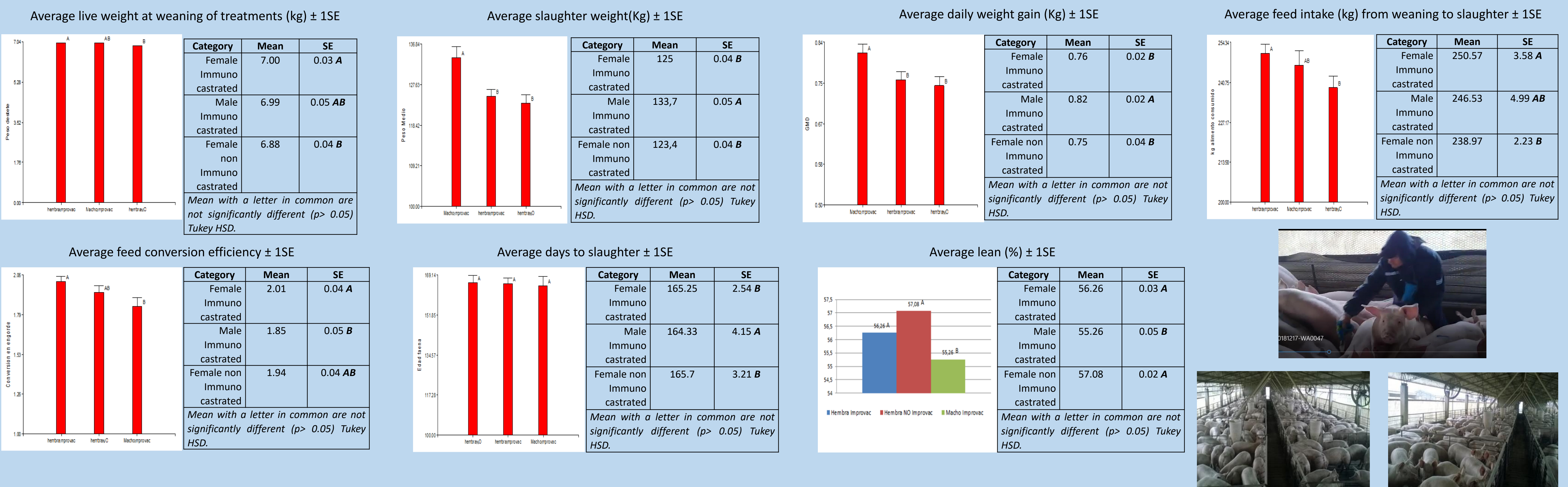
Introduction

Immuno castration in pigs inhibits the action of pituitary gonadotropins and, consequently, reduces sexual activity in the fattening stage. In males the sexual odor decreases due to the absence of the secretion of the hormone testosterone, and in females the reduction of estrogen, attenuating sexual libido, fights and mounts during estrus. Castration as routine management forces the livestock sectors to use alternative methods as a market requirement, to replace surgical castration seeking considerations of animal welfare and avoid social rejection of consumers. Immunological castration is a very sought after alternative to improve animal welfare compared to the physical castration of piglets which is a painful and stressful procedure, however, the injections necessary for immune castration can cause pain and stress. In females is important to inject a gonadotrophic inhibitor that prevents the sow from entering puberty and triggers low ingestion and stereotypes of aggressive behaviors that lead to a decrease in daily weight gain, poor conversion efficiency and skin lesions by riding, bites and aggression during the heat in the group housings. In the present investigation, males and females were treated with commercial immunizing vaccines and compared with non-immune castrated females, productive variables and animal behavior patterns.

Materials and methods

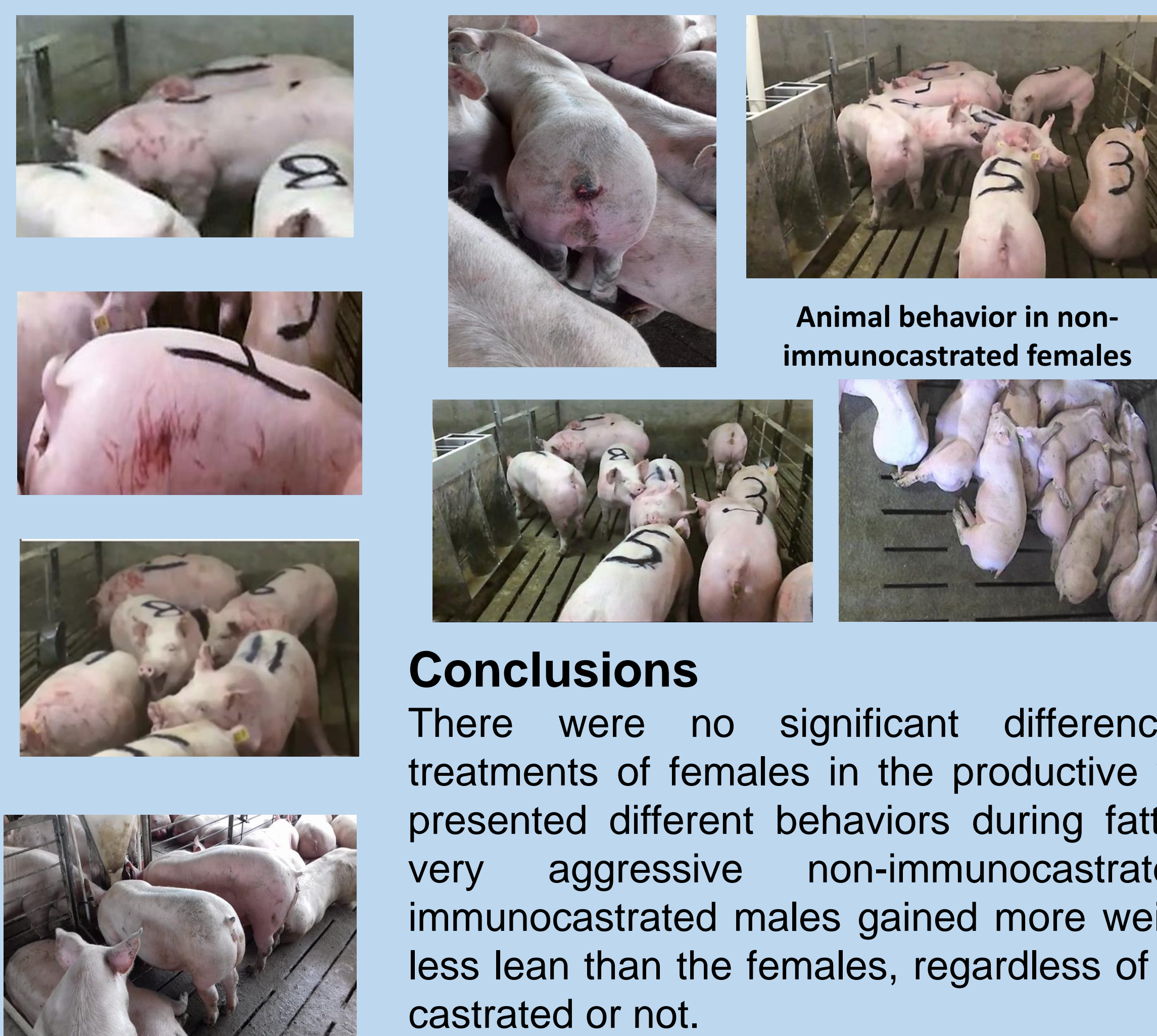
The experimentation was carried out in a Demonstration Unit of Porcine Production in the province of La Pampa, Argentina (GPS Coordinates: SL 35°47'00" WL 63°42'00", Altitude 187 masl). Twenty-four groups of pigs of 60 individuals each were evaluated on average ± 5, from weaning to slaughter (6.9 ± 0.2 - 129 ± 6 kg), with the following distribution: 6 groups with immune castrated male pigs, 8 groups with immune castrated females and 10 groups of females without treatment. The application of the gonadotropin inhibitor was given to those treated at the same age and in two doses. The treatments were ordered in a completely randomized, unbalanced experimental design. In each treatment, the average quantitative values of daily weight gain from slaughter (kg / day) were measured - DWG, food consumption (kg / day), feed conversion efficiency (consumption / DWG), age at slaughter (days) and beef quality in the romaneo (% of lean). Ethological studies were carried out after the second vaccination for the observation of stereotypes and to assess the normality or not of the behaviors, the social patterns of organization and hierarchies, the motivation and the expression of preferences of the animals housed in groups. A qualitative observational study was carried out and quantified analytically with frequency scales regarding the complete repertoire of behaviors of an animal in its environment in relation to submissives (they are close to feeders and drinkers): 0 (none) and 1 (one or more than one), dominant (often in drinking troughs and feeding troughs): 0 (more than 3 to 5) and 1 (more than five), libido and riding behavior (appearance of estrus, riding between males or between females): 0 (none) and 1 (one or more than one), area of dry rest areas (ratio of dry areas with buffer and wet areas): 0 (50 - 50); 1 (25 - 75), cannibalism (tail, flank and ear bite): 0 (negative) - 1 (positive), animals with or without walking, walking pain (≥ 10/100 frequency high = 1, lower 0), bruises and skin bruises, wounds and bruises (≥ 10/100 high frequency = 1, lower 0), and frequencies over the number of dead animals (DA) (≥ 5/100 high frequency) = 1, low 0). Individuals with any of the mentioned stereotypes were registered weekly and during the period of termination (80 kg to slaughter), being able to participate in the prevalence of more than one of them, simultaneously. For each variable, observations were recorded for seven weeks and it was decided to record the highest repeatability value for the frequency series option of each variable. To compare behaviors before and after the second vaccination, three ethogram were constructed. On the three treatments during the finished stage, behavioral observations of activity duration (minutes) of the pigs were made by using a video camera in three pens, one per treatment and on five animals of the total of those marked with spray.

Results and Discussion



Results on the frequencies of the observations made in relation to animal behavior. Photographs of the observations

Variables	Treatments		
	Female immuno castrated	Female no immuno castrated	Male immuno castrated
No. Observations / day	1 2 3 4	1 2 3 4	1 2 3 4
DESCRIPTION condition			
Injury count body before vaccination	1 1 1 1	2 1 1 2	0 1 0 0
Injury count body after vaccination	1 1 1 2	2 2 2 1	1 1 0 0
Use of the surface after the 2nd vaccination	0 1 1 1	1 2 1 1	0 0 0 1
Approach to feeders before 2nd vaccination	1 1 0 1	2 1 2 2	1 0 1 1
Approach to feeders after 2nd vaccination	0 0 1 0	2 2 2 1	0 1 1 0
Submissive (little approach to feeders and drinkers)	0 1 0 0	1 1 1 0	0 0 1 1
Dominant (very often to drinkers and feeders)	0 0 0 1	1 1 1 1	0 0 0 0
Libido and riding behavior (Appearance of heat, ride between males or between females)	0 1 0 0	1 1 1 1	0 0 0 0
Surface of dry resting areas (Relation of dry areas with buffer and wet areas)	0 0 0 0	1 0 1 1	0 0 0 0
Cannibalism (Bite of tails, flanks and ears)	0 0 0 1	1 1 1 1	1 0 0 0
Animals with or without possibilities of wandering (pain to walk)	0 0 1 0	1 0 1 0	1 0 0 0
Cuts and bruises on the skin (≥ 10/100 high frequency)	0 0 1 0	1 0 1 1	1 1 0 0
Frequencies on the number of dead animals (AM) (≥ 5/100 high frequency)	0 0 0 0	1 0 0 0	0 0 0 0



Conclusions

There were no significant differences between the treatments of females in the productive variables, but they presented different behaviors during fattening, resulting in very aggressive non-immunocastrated sows. The immunocastrated males gained more weight, but they were less lean than the females, regardless of whether they were castrated or not.

Duration of activities in minutes

Activity in finished (80 to 125 kg of LW)	Period (minutes / hour) average ± 1 SE					
	Female IC		Female non IC		Male IC	
	Diurnal	Nocturnal	Diurnal	Nocturnal	Diurnal	Nocturnal
Sleep and rest	39.1 (± 1,1)	44.1 (± 0,9)	32.3 (± 0,7)	39.8 (± 0,9)	40.5 (± 0,6)	45.7 (± 0,8)
Displacement and standing	10.0 (± 0,2)	4.2 (± 0,1)	14.6 (± 0,3)	6.3 (± 0,2)	9.6 (± 0,2)	3.7 (± 0,1)
Fights and games	1.5 (± 0,2)	0.1 (± 0,01)	4.6 (± 0,3)	1.1 (± 0,02)	1.2 (± 0,2)	0.7 (± 0,2)
Food consumption	6.0 (± 0,4)	0.4 (± 0,01)	5.1 (± 0,3)	0.4 (± 0,01)	6.5 (± 0,5)	0.3 (± 0,01)
Water consumption	1.3 (± 0,1)	0.7 (± 0,08)	2.0 (± 0,2)	1.2 (± 0,07)	1.7 (± 0,2)	1.3 (± 0,2)
Interval between food consumption	43.0 (± 1,7)	59.7 (± 2,0)	39.0 (± 1,9)	51.2 (± 0,9)	41.0 (± 1,0)	55.4 (± 0,8)

340 ° camera with WiFi modem in the housing

