

Effect of the origin farm on cortisol levels in European hare (*Lepus europaeus*) bred in Italy for hunting

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Aim of this study is to underline differences in cortisol levels recorded in European hare (*Lepus europaeus*) bred in Italy with hunting purposes. Hares belonging to different typology of farms have been compared. The farms differed for number of reproducers (NR): FNA20 = family farm NR<20; FCZ200 = family farm NR>200; SINA>500 = semi-industrial NR>500. The sample depended on the farm availability, in an attempt to show most of age classes. Blood samples, collected from the jugular vein, and hair samples, obtained by trichotomy, were collected from each hare on day zero (d0); ten days later (d10) only hair samples were collected. These samples were used to dose cortisol level in serum¹ and hair². Data collected were arranged by farm typology and sex of the animals, and analysed by Analysis of Variance and Student's *t*-tests³. Hares included, owned by Provincial Administrations of Napoli and Catanzaro, were offered for experimentation by management bodies for arranged hunting on the territory (ATC Napoli and ATC Catanzaro 1). Nowadays, in fact, it is usual to resort to restocking, by using hares bred or captured, with the intent to do not compromise native populations while allowing hunting.

Breeding type	Sex	N	age	kg ± SD	Cortiserum d0	Cortihair d0	P≤	Cortihair d10	P≤
SINA >500	F+M	40	4.8	2.380±0.596	14.90±5.06	16.44±5.21	Aa ***	12.00±3.56	***
FNA 20	F+M	40	5.7	2.513±0.543	14.92±4.14	14.48±3.51	b ***	12.02±2.91	***
FCZ 200	F+M	40	5.6	2.457±0.605	15.02±5.02	14.06±3.57	B ***	11.68±2.79	***

Tab. 1: Number (N), age and weight (kg) of hares (female + male) grouped by breeding type: values of serum cortisol of day zero (Cortiserum d0) and hair cortisol of days zero and ten (Cortihair d0 and d10).

Breeding type	Sex	N	age	kg ± SD	Cortiserum G0	Cortihair G0	P≤	Cortihair G10	P≤
SINA >500	F	20	4.8	2.382±0.615	16.12±5.99	19.25±4.93	A ***	13.49±3.26	***
SINA >500	M	20	4.7	2.379±0.592	13.67±3.68	13.62±3.84	**	10.52±3.27	**
FNA 20	F	20	5.9	2.523±0.577	15.36±4.09	14.12±3.35	B *	11.84±2.14	*
FNA 20	M	20	5.5	2.504±0.520	14.48±4.24	14.85±3.71	**	12.20±2.94	**
FCZ 200	F	20	5.6	2.392±0.603	14.98±5.32	13.73±4.27	B	11.89±3.35	
FCZ 200	M	20	5.6	2.522±0.615	15.06±4.85	14.39±2.76	***	11.47±2.27	***

Tab. 1: Number (N), age and weight (kg) of hares grouped by breeding type and sex: values of serum cortisol of day zero (Cortiserum d0) and hair cortisol of days zero and ten (Cortihair d0 and d10).

(Statistical differences between column for $P \leq 0.001$ ***; $P \leq 0.01$ **, between lines for $P \leq 0.05$ small letters; $P \leq 0.01$ capital letters)

Table 1 shows statistical differences in cortisol levels in hairs on d0 between the semi-industrial farm and the family farm. Hares belonging to the latter typology seem to undergo more stressing conditions, which would act, however, more on female than male hares (table 2). A period of ten days seems to be enough to bring down significantly cortisol levels in hair in all subjects but female hares of the FCZ200 group that would not appear excessively stressed neither on d0.

Key words

Lepus europaeus, stress, cortisol, breeding

References

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