

Research title

Allostasis in dogs: maternal hpa-axis activation during pregnancy and neonatal outcome

Allotasi nel cane: attivazione dell'asse materno ipotalamo-ipofisi-surrene in gravidanza e conseguenze nei neonati

Tutor

Prof Maria Cristina Veronesi

Contact details

Università degli Studi di Milano

Dipartimento di Medicina Veterinaria

E-mail: maria.veronesi@unimi.it

ORCID 0000-0002-6062-6692

<http://www.dimevet.unimi.it/ecm/home>

State of the art and aims of the project

Allostasis is considered as the response of the body to stressful conditions, ending with the secretion of cortisol by the activation of the Hypothalamus-Pituitary-Adrenal-axis (HPA-axis). During pregnancy, animals are susceptible to factors that can impair allostasis, affecting pre-natal development and birthweight, but also post-natal weight gain and resistance to neonatal diseases. Despite the high perinatal mortality rate, these aspects received little interest in dogs, mainly because concerns on animal welfare in newborns. However, coat and claws were recently proved to be suitable and ethically acceptable matrices for the studies of long-term cortisol changes, as marker of HPA-axis activity, in newborn puppies. Therefore, because allostasis in bitches during pregnancy and the possible effects of maternal HPA-axis activation on neonatal outcome were never investigated, the project is designed to study these aspects in the dog by using matrices collectable without invasiveness, such as coat and claws, in the respect of animal welfare.

Recent publications of the tutor in the field

1. Fusi J, Comin A, Faustini M, Prandi A, **Veronesi MC** (2018)

The usefulness of claws collected without invasiveness for cortisol and dehydroepiandrosterone (sulfate) monitoring in healthy newborn puppies after birth *Theriogenology*, 122:137-43.

2. Fusi J, Comin A, Bolis B, Prandi A, **Veronesi MC** (2018) 17- β -estradiol, testosterone and progesterone concentrations in claws of dogs collected from birth until 60 days of age 21st EVSSAR Congress, Venice, Italy, 22-23 June 2018, 188.

3. **Veronesi MC**, Comin A, Meloni T, Faustini M, Rota A, Prandi A (2015) Coat and claws as new matrices for non invasive long-term cortisol assessment in dogs from birth up to 30 days of age *Theriogenology* 84(5):791-796.

4. Comin A, Peric T, Corazzin M, **Veronesi MC**, Meloni T, Zufferli V, Cornacchia G, Prandi A (2013) Hair cortisol as a marker of hypothalamic-pituitary-adrenal axis activation in Friesian dairy cows clinically or physiologically compromised *Livestock Science* 152: 36–41.

5. Comin A, **Veronesi MC**, Montillo M, Faustini M, Valentini S, Cairoli F, Prandi A (2012) Hair cortisol level as a retrospective marker of hypothalamic-pituitary-adrenal axis activity in horse foals *The Veterinary Journal*, 194(1): 131-132.