

ESVCN



Chair of Animal Nutrition and Dietetics

22<sup>nd</sup> CONGRESS of the EUROPEAN  
SOCIETY OF VETERINARY  
AND COMPARATIVE  
NUTRITION

PROCEEDINGS

SEPTEMBER  
6<sup>th</sup> - 8<sup>th</sup> 2018

LUDWIG- MAXIMILIANS- UNIVERSITÄT  
MUNICH, GERMANY



**Dog nutrition during pregnancy and lactation**Musco N.<sup>1</sup>, Orlandi R.<sup>2</sup>, Vallesi E.<sup>2</sup>, Calabrò S.<sup>1</sup>, Cutrignelli M.I.<sup>1</sup><sup>1</sup>Department of Veterinary Medicine and Animal Production, University Federico II, Napoli, Italy<sup>2</sup>Tyrus Clinica Veterinaria, Terni, Italy

**Introduction:** An appropriated nutritional management during the reproductive phase must be aimed to optimize conception, litter size, bitch ability to deliver, puppies live weight and vitality<sup>1</sup>. Therefore, before mating and conception, as well and during pregnancy and lactation it is necessary to guarantee to the bitches all nutrients necessary for the reproduction requirements. In particular, during the estrus and the first two-thirds of gestation, the nutritional requirements are not higher than adult maintenance needs. Nevertheless, attention must be focused on bitches' body condition and to the quality of administered diet in terms of nutrients digestibility and bio-availability.

**Animals, materials and methods:** Twenty female adult dogs ( $3.6 \pm 0.10$  years;  $27.56 \pm 14.7$ kg body weight;  $3.22/5 \pm 0.46$  BCS) of different breeds, since the beginning of estrus, were equally divided for weight, breed and BCS, into two groups and were fed with two different diets (low density LD vs. high density HD). The diets differ for protein (30.7 vs. 35.8% for LD and HD, respectively), lipid (10.4 vs. 13.3% for LD and HD, respectively) and NFE (55.1 vs. 45.9% for LD and HD, respectively) contents and energy density (16.2 vs. 16.7 MJ/kg for LD and HD, respectively). Both diets in each physiological reproductive phase were administered according to the NRC guidelines<sup>2</sup>. Live weight and body condition score of dams were monitored every three days during pregnancy and the puppies were weighed daily in the first week of life and, subsequently every seven days, until the age of 28 days. At 7, 14 and 21 days of lactation samples of milk were collected from each nipple and analyzed for crude protein (AOAC 991.21) and fat (AOAC 2000.18) contents<sup>3</sup>.

**Results and discussion:** All the dams naturally delivered in time ( $59 \pm 2.0$  d); despite no differences were detected for body weight and BCS at the beginning and at the end of pregnancy between groups, the BCS of HD group was significantly ( $P < 0.05$ ) higher than LD ones ( $3.40/5$  vs.  $2.75/5$ ). No significant differences were registered at birth in terms of litter size (average No. of puppies/dam  $7 \pm 3$  vs.  $6 \pm 3$  for HD and LD, respectively) or weight at birth (433 vs. 415 g, for HD and LD, respectively). However, from the 1<sup>st</sup> to 4<sup>th</sup> week of life puppies of HD group showed significantly lower ( $P < 0.05$ ) body weight. Even if no significant differences between groups and during lactation were registered in term of milk's chemical composition, HD group showed lower protein (7.51 vs. 9.07%) and fat (9.37 vs. 10.04%) values, this could probably due to a higher milk yield related to the higher number of nursing puppies (total 68 vs. 59, for HD and LD, respectively).

**Conclusion:** These preliminary results confirm that the milk composition of the bitch during lactation is fairly stable. The higher protein and fat content, mainly represented by essential fatty acids (data not reported) of HD diet seems able to improve litter size and puppies live body weight at birth, while during suckling period, when both diets were administered *ad libitum*, LD diet allows better performance in terms of milk chemical composition and puppies growth dynamics.

**References:** 1 Fontaine E. (2012) *Reprod Dom Anim* 47, 6: 326–330; 2 NRC (2006) *Nutrient Requirements of Dogs and Cats*. National Academies Press Washington, DC; 3 AOAC (2005) *Official Methods of Analysis* 18<sup>th</sup> edition. Association of Official Analytical Chemists, Arlington, VA, USA.