060 | Fatty acid profile of canine colostrum, milk and industrial milks

S Chastant[1]; A Fournier[1]; H Mila[1]; A Adib-Lesaux[2]; L Boutigny[2]; A Grellet[1]; D Rousseau-Ralliard[3]

[1]*Neocare, UMR 1225, Toulouse National Veterinary School, Toulouse, France;* [2]*Royal Canin, Aimargues, France;* [3]*UMR 1198, INRA, 7852 Jouy en Josas, France*

Introduction and aim: Milk fatty acids (FA) represent major sources of energy but also of essential nutrients for newborn puppies. They are involved into growth, neurological development, immunity and numerous metabolic pathways (including insulin sensitivity). The aim of this work was to compare FA profiles of 18 industrial milks (IndMs) designed for puppies with that of canine mammary secretions (CMS) of the first week of lactation.

Materials and methods: Colostrum and milk samples were collected within one multiracial kennel. In bitches freely suckled by their puppies, CMS (from all glands) were collected at Day 1 (D0 = whelping; n = 23), D3 (n = 18) and D7 (n = 26) and stored at −20°C. IndMs (n = 18) were diluted following the manufacturer's instruction. FA were quantified by gas chromatography [1]. For the comparison between CMS and IndMs, 11 FA were selected. For one given FA, concentrations in IndMs were considered as *"satisfactory"* if above the 25% lowest (Q1) concentrations measured in CMS from D1-3 (colostrum). A second comparison was performed with Q1 of concentrations measured in CMS from D7 (milk). Results are expressed as mean ± SEM. Statistical analysis was conducted with repeated measures ANOVA and Principal Component Analysis (PCA).

Results: Total fatty acids (FA) concentration did not significantly vary over the first three days after whelping (D1: 40.2 ± 8.7 g/L; Day 3: 38.8 ± 6.8 g/L) and then increased markedly (D7: 56.8 ± 9.2 g/L) ($p < 0.001$). The concentration of some FA families (saturated FA, unsaturated FA, n-3 and n-6 FA) and some individual FA (alpha-linolenic acid ALA, eicosapentaenoic acid EPA, docosahexaenoic acid DHA) followed the same pattern. In contrast, the increase in DPA concentration is limited, and arachidonic acid AA concentration as well as polyunsaturated/saturated ratio (59 ± 8.0%) and n-6/n-3 ratio (10.6 ± 1.6) remain stable over the first week of lactation.

PCA evidenced that all FA profiles from CMS (whatever the delay from whelping) are closely clustered, whereas an important diversity was noticed among IndMs FA profiles. Compared to D1-3 CMS, total FA concentration was satisfactory for 11 out of 18 IndMs. In total, over the 11 parameters evaluated, IndMs reached the requirements for only 2 parameters (median; Q1: 2; Q3 3). The FA concentrations were satisfactory in most IndMs for saturated FA (SFA; 14/18 IndMs), and less frequently satisfactory for ALA (6/18), n-3 FA (3/18), EPA and DHA (3/18 for both), polyunsaturated FA (PUFA) (1/18), n-6 (1/18), AA (1/18), DPA (0/18). Compared to D7 CMS, IndMs were satisfactory for 2 parameters (Q1 = 1, Q3 = 2). They are in excess of SFA (x1.9) and at the opposite, in deficit of PUFA (: 2.7) compared to CMS, with a more pronounced deficit in n-3 than in n-6 FA. Most IndMs contain almost null concentrations in AA (15/18), EPA (14/18), DHA (15/18), DPA (15/18).

Conclusion: As industrial milks are made from bovine milk, the striking differences between their fatty acids profiles and those from canine mammary secretions was expected. Deficit observed for some FA are similar to those evidenced in formulas for human infants, especially in AA [2]. Since IndMs display major differences between them, users may be advised to prefer those found satisfactory for total fatty acid concentration, saturated FA concentration (of easier metabolization), DHA and EPA (important for neurological development), with a n-6/n-3 ratio equivalent to the one of mammary secretions. This work contributes to provide objective data to choose milk replacer optimal for the newborn puppy but has to be confirmed with comparison with other CMS collected from bitches fed other regimens.

References: [1] Rousseau D. et al. 2003. Am J Physiol Heart Circ Physiol 285: H1294–H1302.

[2] Koletzko B. Ann Nutr Metab 2016; 69 (suppl 2): 28–40.

061 | Evaluation of progesterone measurements with the Speed Reader®

T Conze[1]; H Hussein[1,2]; G Schuler[1]; A Wehrend[1]

[1]*Clinic of Obstetrics, Gynecology and Andrology of Large and Small Animals with Ambulatory Service, Faculty of Veterinary Medicine, Justus-Liebig-University Giessen, Germany;* [2]*Department of Theriogenology, Faculty Vet. Med., Assiut University, Assiut, Egypt*

Email: theresa.conze@vetmed.uni-giessen.de

Introduction and aim: With the new development of in-house progesterone tests, there is a new economically attractive and fast way to measure progesterone in small animal practices. In 2017 the immunochromatographic method for the quantitative measurement of P4 in canine blood samples was introduced into the market (Speed Progesterone™ using the Speed Reader®, Virbac, France). Nerveless, the radioimmunoassay is still the golden standard to measure progesterone (1).The aim of this study was to compare the results of the measurements with the Speed Reader® and a well-established in-house radioimmunoassay (1).

Material and methods: Blood from 45 healthy bitches, which were presented for the determination of the optimal time of breeding, were taken. Serum was obtained and divided into two aliquots, Progesterone was measured with the RIA and Speed Reader®, respectively. The methods were statistically evaluated by pairwise linear regression analysis. Due to the measuring range of the Speed Reader®, only samples between 1 and 20 ng/mL were included in the study.

Results: The pairwise linear regression analyses revealed a highly significant ($p < 0.001$) positive correlation. The correlation coefficient (R) for the Speed Reader® vs. RIA was R = 0.94. The regression line for the Speed Reader® vs. RIA was close to the identity line (slope: 0.93, intercept: 0.53). In one of the samples a P4 concentration of

Reproduction in Domestic Animals

Vol. 54 · Supplement 2
June 2019 · 1–114

Editor-in-Chief: Heriberto Rodriguez-Martinez

Proceedings of the 22nd EVSSAR Congress

Berlin, Germany
28 – 29 June 2019

Guest Editors: Carina Blaschka,
Detlef Rath and Jens Tetens

Official Organ of
European Society for Domestic Animal Reproduction
European Veterinary Society of Small Animal Reproduction
Spanish Society of Animal Reproduction

WILEY