



HAL
open science

Saliva steroidome and metabolome in mare during anestrus, estrus cycle and gestation

Stéphane Beauclercq, Cécile Douet, Antoine Pianos, Léna Haddad, Fabrice Reigner, Philippe Liere, Lydie Nadal-Desbarats, Ghylène Goudet

► **To cite this version:**

Stéphane Beauclercq, Cécile Douet, Antoine Pianos, Léna Haddad, Fabrice Reigner, et al.. Saliva steroidome and metabolome in mare during anestrus, estrus cycle and gestation. International Congress on Animal Science of the European Federation of Animal Science (EAAP), Aug 2023, Lyon, France. hal-04128323

HAL Id: hal-04128323

<https://hal.inrae.fr/hal-04128323>

Submitted on 14 Jun 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Saliva steroidome and metabolome in mare during anestrus, estrus cycle and gestation

Stéphane Beauclercq¹, Cécile Douet², Antoine Pianos³, Léna Haddad³, Fabrice Reigner⁴, Philippe Liere³, Lydie Nadal-Desbarats⁵, Ghylène Goudet²

¹ BOA, INRAE, Université de Tours, Nouzilly, France

² PRC, INRAE, IFCE, CNRS, Université de Tours, Nouzilly, France

³ U1195 INSERM Université Paris Saclay, Kremlin Bicêtre, France

⁴ PAO, INRAE, Nouzilly, France

⁵ UMR 1253, iBrain, INSERM, Université de Tours, Tours, France

Precision livestock farming using omics approach such as metabolomic and steroidomic to acquire precise and real-time data can help farmers in individual animal management and decision making. Moreover, saliva collection is a non-invasive, painless and easy sampling method. Thus, this prospective study proposes a metabolomic and steroidomic analysis in mare saliva during reproductive stages, in order to identify salivary biomarkers to detect their reproductive stage in a welfare friendly production system. Saliva samples from 6 mares were collected in anestrus, in the follicular phase 3, 2 and 1 day before ovulation and the day when ovulation was detected, in the luteal phase 6 days after ovulation and in gestation 18 days after ovulation and insemination. Metabolome and steroidome analysis were performed by ¹H-nuclear magnetic resonance spectroscopy and gas chromatography coupled to tandem mass spectrometry, respectively. We identified 59 metabolites and 25 steroids in saliva. The salivary concentrations of metabolites were significantly different between the anestrus stage and another stage (n = 11 metabolites or group of metabolites), between follicular phase and gestation (n = 1), between the day of ovulation and the luteal phase (n = 1), during the 4 days until ovulation (n = 4). The salivary concentration of pregnenolone during gestation was significantly higher than during anestrus or follicular phase and tended to be higher than during luteal phase. Most of the 5 α -reduced metabolites of progesterone showed higher salivary concentrations during the luteal phase and gestation compared to anestrus and follicular phase. These metabolites and steroids could be potential salivary biomarkers of the reproductive stage of the mare. They could allow to easily detect their reproductive stage for real-time decision making at the individual animal level. Further studies with a greater number of animals are in progress to confirm the reliability of these candidate biomarkers.

17/2/23:

Dear Dr Goudet,

Thank you for submitting your abstract, we have received your contribution for EAAP Annual Meeting 2023, Lyon, France in good order.

Abstract no.: 41237

Abstract title: Saliva steroidome and metabolome in mare during anestrus, estrus cycle and gestation

Author: Beauclercq, S., Douet, C., Piano, A., Haddad, L., Reigner, F., Liere, P., Nadal-Desbarats, L., Goudet, G.

Preferred presentation: Poster

Preferred session: 82: Alternatives to hormones, antibiotics, dewormers and chemical inputs in (equine) breeding and production

Abstract text:

Precision livestock farming using omics approach such as metabolomic and steroidomic to acquire precise and real-time data can help farmers in individual animal management and decision making. Moreover, saliva collection is a non-invasive, painless and easy sampling method. Thus, this prospective study proposes a metabolomic and steroidomic analysis in mare saliva during reproductive stages, in order to identify salivary biomarkers to detect their reproductive stage in a welfare friendly production system. Saliva samples from 6 mares were collected in anestrus, in the follicular phase 3, 2 and 1 day before ovulation and the day when ovulation was detected, in the luteal phase 6 days after ovulation and in gestation 18 days after ovulation and insemination. Metabolome and steroidome analysis were performed by ¹H-nuclear magnetic resonance spectroscopy and gas chromatography coupled to tandem mass spectrometry, respectively. We identified 59 metabolites and 25 steroids in saliva. The salivary concentrations of metabolites were significantly different between the anestrus stage and another stage (n = 11 metabolites or group of metabolites), between follicular phase and gestation (n = 1), between the day of ovulation and the luteal phase (n = 1), during the 4 days until ovulation (n = 4). The salivary concentration of pregnenolone during gestation was significantly higher than during anestrus or follicular phase and tended to be higher than during luteal phase. Most of the 5alpha-reduced metabolites of progesterone showed higher salivary concentrations during the luteal phase and gestation compared to anestrus and follicular phase. These metabolites and steroids could be potential salivary biomarkers of the reproductive stage of the mare. They could allow to easily detect their reproductive stage for real-time decision making at the individual animal level. Further studies with a greater number of animals are in progress to confirm the reliability of these candidate biomarkers.

Please carefully check that the abstract information above is correct. If not, please make the changes using the website edit tools.

Until the deadline of 1 March 2023, you can go back to your abstract (click on “My abstracts”) to make changes. After this deadline, the Scientific Committee starts reviewing the abstracts. You will still be able to view your abstract after this date.

If the scientific committee wants you to make changes in your abstract, you will be informed by e-mail in March. The second half of April, we expect to be able to send you an e-mail, in which we indicate whether your abstract has been accepted or not.

Please note that session and form of presentation (oral/poster) of submitted contributions may be changed, following the decision of the EAAP Scientific Committee.

Please note also that submissions of presenting authors who have not registered before the deadline for early registration, will be removed from the book of abstracts. For this reason it is important to indicate the presenting author carefully.

In case you have any questions regarding registration, hotels etc., please contact the conference agency at: EAAP 2023 Secretary:

E-mail: infoeaap2023@wearemcj
<https://eaap2023.org/>

With kind regards, on behalf of the French organisers,

Wageningen Academic Publishers
(This is an automated message)

Message sent by OASES; for more information on OASES: www.WageningenAcademic.com/OASES or e-mail OASES@WageningenAcademic.com