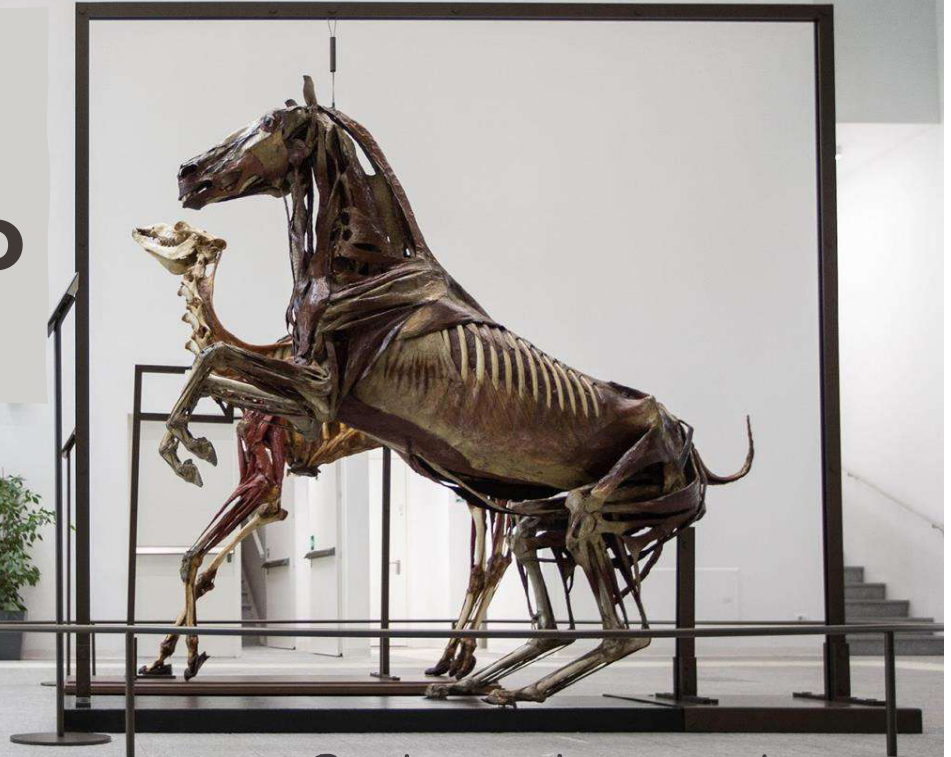




UNIVERSITÀ  
DEGLI STUDI  
DI MILANO



# ATTI 75° Convegno



*Dicebamus hesterna die*

AIPVET • AISMVEM • AIVI • AMV • ANIV • ARNA • RNIV •  
SICLIM-Vet • SICV • SIFTVET • SIRA • SOFIVET • SOIPA

**15 - 18 Giugno 2022**

**Dipartimento di Medicina Veterinaria e Scienze Animali  
Università degli Studi di Milano  
Via dell'Università 6, Lodi**

Con il patrocinio di



PROVINCIA  
DI LODI



Regione  
Lombardia

## EVALUATION OF THE EFFECT OF OXIDATIVE STRESS ON UTERINE PATHOLOGIES IN POSTPARTUM DAIRY COWS

Sanjana Malledevarahalli Chandrappa (1), Gianguido Donato(1), Ahmed Elkhawagah(1)(2), Giorgia Meineri (1), Leila Vincenti (1), Alessandro Ricci (1)

(1) Università degli Studi di Torino, Dipartimento di Scienze Veterinarie. (2) Theriogenology Department, Faculty of Veterinary Medicine, Benha University, Egypt.

Corresponding author: S. Malledevarahalli Chandrappa (sanjana.malledevarahallichandrappa@unito.it)

Dairy cows diagnosed with metritis (METR) and endometritis (ENDO) may experience a greater degree of oxidative stress (OS) and a deficit in the antioxidative capacity compared to healthy cows. Serum OS markers can be used as a management tool to monitor the early stages of uterine diseases. This study aims to evaluate the effect of OS markers and the influence of metabolic status in postpartum cows affected by METR, ENDO, and combined form (COMB). In this study, 121 Holstein cows were subjected to a weekly clinical examination from  $7 \pm 3$  to  $35 \pm 3$  days postpartum (dpp). Among 121 cows, 21 were diagnosed with METR, 18 with ENDO, 24 with COMB, and 58 were healthy cows. Fetid vaginal discharge and  $T^{\circ} > 39.5$  were considered (first 21 dpp) to diagnose METR, and vaginal discharge (more than 21 dpp) was scored to diagnose ENDO, and COMB cows if showed both diseases [1]. Blood samples for serum reactive oxygen metabolites (d-ROM), antioxidants (OXY), and oxidative status index (OSI) tests, evaluated via photometric determination of plasma thiols, were performed at 7, 14, 21, 28, and 35 dpp. Blood glucose and  $\beta$ -Hydroxybutyrate (BHB) were measured at day  $7 \pm 3$  dpp. If  $BHB > 1.2$  mmol/L, cows were considered ketotic (KET) [2]. For this analysis, the statistical program used is the R software version 1.41. Significance was considered with  $P < 0.05$ . Serum concentrations of d-ROMs and OSI were greater in METR ( $116 \pm 28$  Carratelli units (UCarr)), ENDO ( $94 \pm 26$  UCarr), and COMB ( $110 \pm 27$  UCarr) than in healthy ( $84 \pm 23$  UCarr);  $P < 0.05$ . OSI for METR ( $0.42 \pm 0.26$ ), ENDO ( $0.36 \pm 0.24$ ), and COMB ( $0.39 \pm 0.25$ ) vs Healthy ( $0.18 \pm 0.05$ );  $P < 0.05$ . The concentration of OXY was lower in METR ( $345 \pm 153$   $\mu\text{mol/L}$ ), ENDO ( $380 \pm 170$   $\mu\text{mol/L}$ ), and COMB ( $360 \pm 160$   $\mu\text{mol/L}$ ) than in healthy cows ( $474 \pm 115$   $\mu\text{mol/L}$ );  $P < 0.05$ . The incidences of METR, ENDO, or COMB were 16%, 19%, and 19%. Moreover, the parturition to conception interval (PC) was higher than in healthy cows ( $189 \pm 20$ ,  $148 \pm 21$ ,  $170 \pm 15$  vs  $126 \pm 10$ ;  $p < 0.05$ ). Milk yield decreased in METR, ENDO, and COMB compared to healthy animals (28, 32, 30 vs 39.2 kgs). There was no significant difference in blood glucose and BHB concentration between healthy and diseased cows ( $P > 0.05$ ). This study showed that cows with METR, ENDO, and COMB experience a greater degree of OS in comparison to healthy cows. These findings provide new avenues for research for prevention and potential supportive treatments for metritis and endometritis via the utilization of antioxidants *per os*.

[1] Sheldon I.M. et al. Defining postpartum uterine disease and the mechanisms of infection and immunity in the female reproductive tract in cattle, *Biology of reproduction*, 81:1025-1032, 2009.

[2] Gordon J.L., LeBlanc S.J. and Duffield T.F. Ketosis treatment in lactating dairy cattle. *The veterinary clinics of North America, Food animal practice*, 29:433-445, 2017.