



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

Con il contributo di



Anatomage



Con la partecipazione di



Segreteria Organizzativa e Scientifica



SAFOOD

Largo Braccini 2
10095 Grugliasco (TO)

Tel. 011-670.9263

direzione@safood.it



75° Convegno SISVET

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

Lodi,
15 – 18 Giugno
2022

DIVAS, UNIMI - Lodi



IL CODICE ISBN ASSOCIATO AGLI ATTI DEL 75° CONVEGNO E'

978-88-909092-3-8

PROPER MANAGEMENT CAN COMPENSATE FOR PARTIAL FPT IN ALPINE GOAT KIDS

Mariana Roccaro (1), Marilena Bolcato (2), Alessandro Tirolo (2), Francesco Dondi (2), Arcangelo Gentile (2), Angelo Peli (1)

(1) Alma Mater Studiorum – Università di Bologna, Dipartimento di Scienze per la Qualità della Vita. (2) Alma Mater Studiorum - Università di Bologna, Dipartimento di Scienze Mediche Veterinarie.

Corresponding author: M. Roccaro (mariana.roccaro2@unibo.it)

The importance of colostral immunity for the health, survival and productive performance of young ruminants is well established [1]. However, differently from calves and lambs, the individual factors that may directly affect passive immune status and its potential long-term effects have not been widely investigated in goats [2, 3]. The aim of this study was to investigate the effect of sex, litter size (singlet vs twin), dam parity (pluriparous vs primiparous) and birth body weight (BW) on serum immunoglobulin (Ig) concentration (of which IgG account for the largest fraction) and to evaluate the effect of passive transfer status on pre-weaning growth performance in Alpine goat kids. The study was approved by the Animal Welfare Body of the University of Bologna (Prot. No. 77988/2022).

Thirty-nine Alpine goat kids (22 males, 17 females) from the same dairy farm were included in the study. All kids were weighed right after birth. They were then allowed to naturally suckle their mothers until weaning (50 days), when they were weighed again. Blood samples were collected 24 hours after birth. Serum Ig concentration was determined by means of electrophoresis. Mean \pm SD values for serum Ig concentration, birth BW, day 50 BW, and average daily gain (ADG) from birth to day 50 were calculated. Differences in Ig concentration depending on sex, litter size and dam parity were investigated (Student's t-test). Least squares simple linear regression was used to evaluate the association between birth BW and serum Ig concentration and between serum Ig concentration and pre-weaning growth performance. Statistical analysis was performed using GraphPad Prism (v. 8.2.1).

Serum Ig concentration ranged from 0.20 to 3.30 g/dl (1.37 ± 0.68 g/dl). Birth BW ranged from 2.30 to 4.92 kg (3.81 ± 0.53 kg). BW at weaning ranged from 11.40 to 16.10 kg (13.58 ± 1.37 kg). ADG ranged from 0.16 to 0.26 kg (0.19 ± 0.02 kg). No significant differences in serum Ig concentration between males and females, singlets and twins, pluriparous' and primiparous' kids were found. No association was detected between birth BW and serum Ig concentration, as well as between serum Ig concentration and pre-weaning growth performance in terms of BW at weaning and ADG. Although partial failure of passive transfer (FPT; Ig < 0.8 g/dl) [4] was diagnosed in 17.9% of kids (7/39), no effects on morbidity (0%), mortality (0%) and growth performance were observed in our sample.

Whilst the absence of a sex bias for serum Ig concentration has been previously observed [4, 5], our results show that litter size and dam parity do not influence serum Ig concentration, differently from other studies [6, 7]. Moreover, passive transfer status does not affect health and pre-weaning growth performance in Alpine goat kids allowed to remain with their mothers in a nonintensive farming system. This is in contrast with other studies involving lambs and goat kids of other breeds [2, 8]. In conclusion, these findings support the notion that proper management and animal care can compensate for partial FPT in protecting against diseases and enables this goat breed to express its full capacity to raise offspring with optimal health and welfare conditions.

[1] Smith B. P. Ruminant immunodeficiency diseases. In *Large Animal Internal Medicine*, 4th ed. Elsevier, 2009, pp. 1677-1680.

[2] Massimini et al. Effect of passive transfer status on preweaning growth performance in dairy goat kids. *Journal of American Veterinary Medical Association*, 231:1873-1877, 2007.

[3] Castro et al. Effects of newborn characteristics and length of colostrum feeding period on passive immune transfer in goat kids. *Journal of Dairy Science*, 92:1616-1619, 2009.

[4] Mellado et al. Immunoglobulin G concentration and neonatal survival of goat kids delivered in a pen or on open range. *Preventive Veterinary Medicine*, 37:33-39, 1998.

[5] O'Brien et al. Serum immunoglobulin concentrations of newborn goat kids and subsequent kid survival through weaning. *Small Ruminant Research*, 11:71-77, 1993.

[6] Chen et al. Serum protein levels and neonatal growth rate of Nubian goat kids in Taiwan area. *Small Ruminant Research*, 32:153-160, 1999.

[7] Chniter et al. Physiological changes in the peri-partum period and colostral IgG transfer in prolific D'man sheep: effects of parity and litter size. *Tropical Animal Health and Production*, 48:387-394, 2016.

[8] Massimini et al. Effect of passive transfer status on preweaning growth performance in dairy lambs. *Journal of American Veterinary Medical Association*, 229:111-115, 2006.