

RELATIONSHIP BETWEEN ELECTRICAL CONDUCTIVITY AND MILKING FRACTION OF MILK OF MURCIANO-GRANADINA GOATS.

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INTRODUCTION AND OBJECTIVES

Milk electrical conductivity (EC) has been employed for mastitis detection on dairy cows. The research group is working about the use of EC for mastitis detection on dairy GOATS, specially on the local breed (Murciano-Granadina). In previous studies it has been published an increase of EC with establishment of mastitis. Also, it has been published other no inflammatory factors related with it: parity, stage of lactacion and composition.

The aim of the work was to study the relationship between EC and milking fractions of goat milk from glands previously to develop algorithms for goat mastitis detection. The final objective was to know the better fraction to measure EC during milking in order to achieve better mastitis detection. Additionally it was studied the relationship of EC with milk composition at the studied fraction.

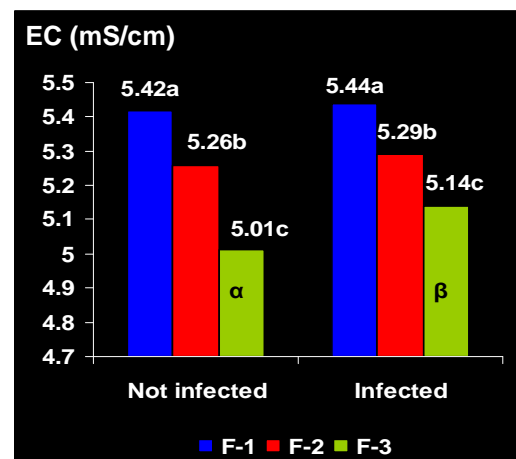
MATERIALS AND METHODS

- 57 Murciano-Granadina goats were enrolled in the study (28 healthy and 29 with unilateral mastitis infection) from the experimental farm of the UMH.
- 3 bacteriologic cultures were carried out with 1 week of interval.
- One single sampling day was done in the fourth month of lactation, taken 3 fractions: F1: first 100 mL, F2: machine milk, F3: last 100 mL
- EC was transformed to logarithm base 10 (LEC).
- A linear mixed model (Proc. Mixed, SAS. 9.1.) was done to study the relationship between EC and:
 - Milking fraction (F1, F2, F3)
 - Parity: primiparous or multiparous
 - Health status of the mammary gland: healthy or infected
 - First term significant Interaction at $P < 0.05$: Fraction x Health status (other interactions were not significant)
 - Using gland (goat) and goat as random terms
- It was studied the relationship between EC and macro-composition of milk (fat, casein, whey protein, lactose and ash) of all the studied fractions with a linear regression (pro. Reg, SAS, 9.2.)



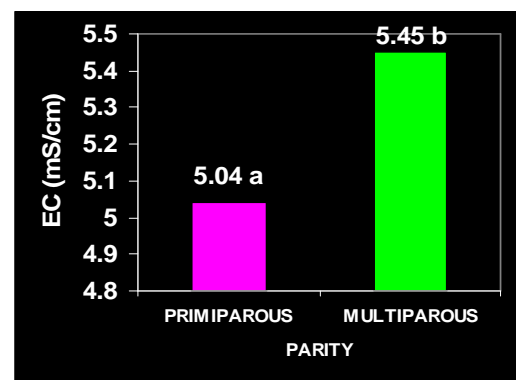
RESULTS

EC by FRACTION X MASTITIS ($P < 0.001$)



abcd: means within a health status with different scripts differ ($P < 0.001$)
 $\alpha\beta$: means within a fraction with different scripts differ ($P < 0.001$)

EC by PARITY ($P < 0.001$)



($P < 0.001$)

RESULTS

F VALUE AND S.L. OF EC

EFFECT	LEC	
	F	S.L.
PARITY	178.63	<0.0001
MASTITIS	0.99	0.3207
FRACTION	12.90	0.0004
FRACTION X MASTITIS	5.08	0.0067

(The rest of first term interactions resulted not significant)

EC & MILK COMPOSITION ($P < 0.001$)

VARIABLE	FAT	LACTOSE	Whey Protein	ASH
R ²	0.27	0.39	0.08	0.02

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CONCLUSIONS

All fractions studied provided similar results for on-line EC measurements for mastitis detection.

The greatest differences between healthy and infected glands at F3 fraction are not high enough to be detected by commercial conductimeters.

Further studies are needed on on-line daily measurements of EC to determine highly optimized algorithms for mastitis detection.