

PREVALENCE AND MANAGEMENT PRACTICES ASSOCIATED WITH BULK TANK MILK PREVALENCE OF STAPHYLOCOCCUS AUREUS AND COLIFORMS IN AZOREAN DAIRY HERDS

Pacheco¹, D.; Soares², L.; Moitoso², M.; Maldonado³, J.; Guix³, R.; Simões⁴, J.; Azevedo³, C.

¹University of Évora. Largo dos colegiais 2, 7004-516 Évora, Portugal.

²São Miguel Young Farmers Association. Arrifes. 9500-372 Ponta Delgada, São Miguel, Azores, Portugal.

³HIPRA, Amer (Girona), Spain.

⁴University of Trás-os-Montes e Alto Douro, Quinta de Prados, 5000-811 Vila Real, Portugal.

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OBJECTIVES

The aims of the present study were to determine the apparent prevalence of *Staphylococcus aureus*, *Escherichia coli* and other coliforms (COL) from bulk tank milk (BTM) samples of dairy farms from Azores, to evaluate the management milking practices associated with these pathogens prevalence, and consequently, the ultimate goal was to emphasize the indication, in Azorean dairy farms, for the use of the first vaccine registered by EMA (European Medicine Agency) for the prevention of mastitis caused by these pathogens (STARTVAC®, HIPRA, Spain).

MATERIALS AND METHODS

In July, 2014, 100 dairy herds considering a total of 6065 adult cows were used from all regions of San Miguel. These animals represented 11.7% (51.684) of whole adults dairy cows on pasture from 5.5% (1833) herds, according data officially reported in São Miguel Island. A total of 100 BTM samples from the 100 selected herds were collected using a qPCR commercial sampling kit (STARTCHECK®, HIPRA, Spain), according the manufacturer instructions, in order to test the presence of *S. aureus*, *E. coli* and COL. A qPCR positive result was recorded when cycle threshold values were ≤ 37 and a sigmoidal amplification plot was obtained. Simultaneously, a questionnaire on management practices was carried out according to 5 main groups: 1) the hygiene of the milking procedures, 2) milking machine and tank 3) diagnosis and treatment of mastitis, 4) drying off, and 5) management of calves. A logistic regression analysis was used in order to evaluate the effect of management practices on pathogens BTM prevalence.

RESULTS

S. aureus, *E. coli* and COL were detected in 59%, 75% and 35% of BTM, respectively. Of the BTM positive samples, 79.7 % (47/59) were concomitantly positive for *S. aureus* and *E. coli*, and 42.4 % (25/59) to *S. aureus* and COL. *E. coli* and COL were detected simultaneously in 38.7 % (29/75) of the samples. On herds without routine use of gloves and pre-dipping during milking, or not using hot water for cleaning the milking utensils, there was at least 2.8 more chance ($P \leq 0.05$) to present *S.*

aureus or COL contamination on BTM (Table 1). Herds without cleanliness practices of udder, teats or tail, milking mastitis and healthy cows together, and lacking treatment records were more affected ($P \leq 0.05$) by the presence of *S. aureus* on BTM. The use of mobile (unrefrigerated) BTM also favored (odds ratio = 3.7; $P \leq 0.01$) the detection of COL on BTM.

Practice	Positive herds to coliform bacteria		Odds ratio	IC 95%	P value
	without practice	with practice			
Glove use	40.7% (33/81)	10.5% (2/19)	5.8	1.3 - 27.0	0.007
Pre-dipping	41.1% (30/73)	18.5% (5/27)	3.1	1.1 - 9.0	0.03
Mobile milking machine	24.5% (12/49)	45.1% (23/51)	0.4	0.2 - 0.9	0.04
Hot water use	46% (29/63)	16.2% (6/37)	4.4	1.6 - 12.0	0.002
Milk bulk tank:					
Refrigerated	-	17.1% (6/35)	Reference	-	-
Mobile	-	43.3% (26/60)	3.7	1.3 - 10.2	0.01
Both	-	60% (3/5)	7.3	1.0 - 53.2	0.05
Calf suck its dam	41.8% (28/67)	21.2% (7/33)	2.7	1.0 - 7.0	0.04

Table 1. Percentage of herds with coliform bacteria in bulk tank milk according to some milking practices.

CONCLUSIONS

These results should be considered in the design of mastitis prevention and control plans for the control of milk quality and suggest that vaccination for the prevention of mastitis (STARTVAC®) can be a real asset as an additional tool in a mastitis control plan in the Azorean dairy herds.

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