

Submitted Abstract

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Abstract

Mastitis is the primary concern of dairy herds, due to therapy cost, milk losses, and increased culling probability. It affects not only the health but also the welfare of dairy cows. Subclinical mastitis is defined by somatic cells increase and positive bacteriological tests. Major pathogens are conventionally divided into environmental and contagious depending on their transmission route.

This study aimed to investigate the risk factors for mastitis in dairy herds in mountain areas.

We sampled 246 dairy cows from 16 herds (mean size=41.1±29.1), which were situated between 270 and 800m a.s.l. in three different geographic areas of northern Apennines (Italy). These areas are characterized by unique livestock industries. In the province of Lucca (LU), most are small farms that process milk on the farm and sell it locally. In Alessandria (AL) small and medium-sized farms supply milk for PDO production or directly to the consumer. In Reggio Emilia province (RE), the production of Parmigiano Reggiano is managed by social dairies owned by the breeders.

Between April and September 2021, we collected milk from clinically healthy cows. Milk samples were subjected to bacteriological investigation. Pathogen identification was confirmed with MALDI-TOF mass spectrometry. During sampling, the breeder was interviewed to gather information about breeder's training, husbandry and biosecurity procedures.

We isolated contagious agents from 40 cows of 9 herds. The prevalence was the highest in AL (31.7%), and the lowest in RE (3.28%). Using milking cart was a risk factor while introducing new animals was a protective factor. Also, breeder's training was a protective factor, but it was no longer significant when managerial factors are considered. Mass spectra analysis confirmed that bacteria very similar to each other circulate within the herd.

Environmental bacteria were isolated in 24 cows of 9 herds. The prevalence was the lowest in AL (2.4%), and the highest in RE (13.9%). Grazing and tie-stall were risk factors for the presence of environmental bacteria.

The main source of contagious agents was the herd itself, where infected cows spread bacteria through milking equipment. Therefore, replacing older cows could reduce the prevalence of subclinical mastitis. The bedding is a source of environmental pathogens, whence free housing is preferable. During grazing, it is advisable to provide cows with ample space to prevent udder contamination.

The best predictor for contagious agents was the geographic area, which possibly means that the socio-economic structure supporting dairy production is crucial for the implementation of control measures.