

P07

Occurrence of pathogenic species of *Enterobacteriaceae*, *Listeria monocytogenes*, *Staphylococcus aureus* and *Brucella* in bovine raw bulk milk in the selected milk sheds Asella Dairy Union and Ada Dairy Cooperatives, Ethiopia

H. Desta, D.Cattaneo¹, P. Anna Martino², V. Antoniazzi, G. Soncini¹, V.Dell'Orto¹, G. Savoini¹

¹Dipartimento di Scienze e Tecnologie Veterinarie per la Sicurezza Alimentare;

²Dipartimento di Patologia Animale, Igiene e Sanità Pubblica Veterinaria; University of Milan, Italy

E-mail: giovanni.savoini@unimi.it

Abstract A study was conducted to assess hygienic practices during production and subsequent handling of milk and the microbial properties of milk in selected dairy potential area in Arsi Zone and Debre Zeit town in Ethiopia. Arsi Zone, composed of highlands with a reliable rainfall as well as drought-prone areas with many small-scale irrigation schemes (4,150 ha of irrigated area in 2007), is located 120 -200 km from Addis Ababa while Debre Zeit is located 45km from Addis Ababa. A total of 220 smallholders were interviewed from selected five districts (Tiyo, Digeluna Tijo, Lemuna Bilbilo, Shirka and Munessa) in Arsi Zone. Out of the total respondents, 66.82% fed a mixture roughages and concentrates while the rest 33.18% of the respondents fed their animals mainly roughages from different sources. The feeding systems used in the study areas were indoor feeding (zero grazing) (33.18%), only grazing (39.55%) and mixed systems (27.27%). The milking system in the study area was hand milking. Average milk production for local dairy cattle ranged from 2.0 liters/day in Shirka district to 2.9 liters/day in Lemuna Bilbilo district. On the other hand, average milk production for crossbred dairy cattle ranged from 8.6 liters/day in Shirka district to 12.5 liters/day in Tiyo district. A total of 106 samples of milk were collected for identifying and understanding quality: 50 samples from smallholder producers in Arsi Dairy Union, 8 from a Bel Deresa dairy farm in Arsi Zone and 48 from member smallholder producers in Ada Dairy Cooperatives in Debre Zeit. Microbiological results from the 106 bulk milk samples evidenced a total of 246 bacterial isolates obtained. These included Enterobacteriaceae species (*E. coli*), *Listeria* species (*Listeria monocytogenes*), *Staphylococcus* species (*Staphylococcus aureus*) and *Brucella*. Isolated *E. coli* constituted 19.5% in Asella milk collection center; Arsi Zone showed 16% *E. coli* whereas Gobelecha milk collection center (Arsi Zone) showed the lowest prevalence (3%). Out of *Listeria* species 1.2% was *Listeria monocytogenes*: Denkaka (Debre Zeit) showed 10% prevalence, next to Kebele 02 (Debre Zeit) which showed 20% prevalence. *Staphylococcus aureus* constituted 3.3%: Gobelecha milk collection center (Arsi Zone) showed 37.5% prevalence. *Brucella* prevalence was 3.3%, Kebele 02 milk collection center (Debre Zeit) showed 40% prevalence and Kebele 11 milk collection center (Debre Zeit) and Bel Deresa dairy farm (Arsi Zone) showed 12.5% prevalence, following Kebele 02 milk collection center (Debre Zeit). This result is mainly due

to unhygienic condition in the process of production, which in turn might be attributed to lack of adequate dairy structure coupled with limited knowledge on the hygienic milk production. To this effect, it is not only important but also necessary to put in place quality standards and quality control systems as well as creating an enabling environment for developing and enhancing knowledge and awareness on hygienic milk production.

Keywords milk;microbial qualities;pathogenic bacteria;Smallholder producers;Ethiopia