Objectives: The aim of this study was to determine causative agents of bovine subclinical mastitis (BSM) over a 10-year period (2001-2010), their prevalence and in vitro resistance to antibiotics.

Materials and Methods: Milk samples (N=426) were taken from udder quarters of cows without clinical symptoms of mastitis held at dairy farms in northwestern Croatia that were positive to California or Zagreb mastitis reagents. Microbiological agents and antibiograms were performed at the Croatian Veterinary Institute according to standard protocols.

Results: the prevalence of causative agents of BSM was recorded as follows: 44.70% S. aureus, 24.70% Staphylococcus sp., 9.64% S. dysgalactiae, 4.47% S. agalactiae, 3.76% Streptococcus sp., 6.82% E. coli, 1.88% Enterobacter sp., 0.70% P. aeruginosa, 2.35% Bacillus sp., 0.47% Candida sp. and 0.23% yeasts (Figure 1.).

The prevalence of streptococcal BSM decreased from 30.77% to 10.77% during the 10-year observation period, while Staphylococcus spp. increased from 42.31% to 80.00%. Resistance to some antibiotics increased from 2001 to 2010 as follows: cefaperazone (0% vs. 15.38%), cephalexin (0% vs. 40.00%), cefquinom (0% vs. 21.53%), amoxicillin and klavulanic acid (7.69% vs. 38.46%) and penicillin (19.23% vs. 49.23%). (Figure 2.)

Conclusions: During the 10-year observation period, the incidence of BSM caused by Staphylococci spp. was significantly increased, as was the resistance of bacteria to certain antibiotics, as a consequence of their frequent use at larger dairy farms (more than 50 cows per farm) and the easier spread of bacteria within and between larger herds in comparison to the beginning of the study when dairy farms in northwestern Croatia were predominately smaller (1-10 cows per farm).