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Detection of biofilm-forming *Staphylococcus aureus* isolated from bovine mastitis and association with antimicrobial resistance in Brazil

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Staphylococcus aureus is one of the most common pathogens responsible for bovine mastitis. Some strains have the ability of producing a viscous extracellular polysaccharide layer (*slime*), which is nowadays considered to be a virulence factor, as it promotes bacterial adhesion onto the mammary epithelial cells or various surfaces, protects bacteria from opsonization, phagocytosis and increased resistance to antimicrobials. The aim of this study was to examinate in vitro slime-producing or biofilm-forming in Staphylococcus aureus and its association with the antimicrobial susceptibility profile. A total of 404 strains of S. aureus isolated from bovine mastitis, from 1994 to 2016, belonging to the Embrapa's collection, were investigated for biofilm-forming. The antimicrobial profile to 15 drugs and combinations of all strains were previously determinated. For the identification of slime-producing was used the Congo red Tryptic Soy Broth assay, considering as positive and negative those who changed the medium black and red or black-red color, respectively. As a result, 338/404 (83.66%) strains of S. aureus were biofilm-forming. It was also observed that there was an association between resistance to penicillin and biofilm production (X2 - p: 0.001), having resistant strains 2.44 (CI: 95%, 1.37-4.33) times more chance to produce biofilm compared to susceptible strains. There was also an association between resistance to groups of antimicrobials and biofilm production (X2 - p: 0.009), strains resistant to one group of antimicrobial have 2.23 (95% CI, 1.20-4.11) times more chance to produce biofilm compared to susceptible strains. In addition, there was an association between the year of isolation and biofilm production (X2 - p< 0.05), strains isolated between 2001-2005 and 2006-2016 have 3.87 (CI: 95%, 1.93-7.77) and 2.86 (CI: 95%, 1.31-6.25) times more chance, respectively, to produce biofilm than those isolated between 1994-2000. In conclusion, this study showed that there was a high percentage of S.aureus biofilm-forming isolated from mastitis. Besides, strains resistance to penicilin or to one group of antimicrobial have more chance to produce slime compared with susceptible strains. Also, it was observed that strains isolated from more current years have more chance to be biofilm producers. Key-words: antimicrobial resistance, slime-producing, mastitis.

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