

# Distribution of contagious and environmental mastitis agents isolated from milk samples collected from clinically health buffalo cows between brazilian dry and rainy seasons of the year

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**ABSTRACT:** The present study was performed to evaluate the microbiological characteristics of clinically health quarters submitted to milking and also to observe the distribution of contagious and environmental agents between brazilian dry and rainy seasons of the year. During nine months 734 quarters from 37 buffalo cows were submitted monthly to udder inspection, palpation and strip cup test before milking. 734 aseptic milk samples were inoculated in 10% ovine blood agar and in MacConkey agar media, then incubated for 72 hours at 37°C. Among the 580 isolated microorganisms, 182 (31,38%) were recovered from samples collected during the rainy season and 398 (68,62%) from the dry season. In the rainy period the most prevalent agents were: bacteria from the genus *Corynebacterium* sp (53,30%), *Staphylococcus* sp (19,78%) and *Rhodococcus equi* (13,74%). In the dry period, the commonest ones were: *Corynebacterium* sp (44,97%), *Staphylococcus* sp (18,84%) and *Micrococcus* sp (9,55%). The results demonstrated that the methods used to select health quarters in brazilian dairy buffalo farms allow the transmission of contagious bacteria during both seasons of the year, maintaining

agents known to cause mainly subclinical inflammatory reactions that compromise cronicly the physiology and production of the mammary gland.

**Key words:** buffalo, mastitis, microorganisms, seasons

**INTRODUCTION:** In bovine herds the prevalence of subclinical mastitis is 25 to 30 times higher than clinical mastitis (DODD, 1983). Nonetheless, predisposing factors important in development of subclinical mastitis in cows such as teat injuries, sphincter imperfections and immunological disorders of mammary quarter are not commonly observed in buffalo cows. Besides, according to Saini et al. (1994), Thirunvukkarasu and Prabakaran (1998) and Brinez et al. (2000), a higher melanin deposition on teat skin, a stronger sphincter, a thicker inner epithelial layer and an improved activity of keratin, transferrin and lactoperoxidase, enhance local resistance.

In Brazil, there are few informations either related to etiology of buffalo cows mastitis or to the impact of such pathology on the quality of milk and its derivatives (Costa, 1999; Amaral et al., 2003; Cunha Neto and Olivera, 2003). One relevant problem in this country is the fact that generally the unique tools used to trial mammary quarters of buffalo cows in the daily milking routine are physical exams of udder and secretion analysis with strip cup test. However, such evaluations do not represent the real sanitary state of the gland once subclinical infections can only be diagnosed with more sensible methods (Philpot, 1986).

Considering that infection sources may be left behind using only physical exams and strip cup test in selection of quarters to be milked, the present study was conducted to: a) evaluate the microbiological characteristics of clinically health quarters submitted to milking and b) observe the distribution of mastitis agents between brazilian dry (april to september) and rainy (october to march) seasons.

**MATERIAL AND METHODS:** In Brazil, the seasons of the year are divided in two: the dry period from April to September and the rainy period from October to March. In the year when this study was performed, the pluviometric index average in the dry season was 50 mm and in the rainy was 188,3 mm. A total of 37 Jaffarabad and Murrah buffalo cows was submitted to monthly examinations during nine months, from March to December, in a farm of 65 animals located in Pompéia, a municipality from São Paulo State, Brazil (latitude 22°06'31" south and longitude 50°10'18" west, 597 m height). The animals were kept in a management with semi-intensive system on pasture, no access to water collections and milked by machine twice daily.

During the period, before the calves were allowed to suckle, a total of 734 mammary quarters were submitted to diagnosis of clinical mastitis through inspection and palpation in order to identify tissue alterations and also to the strip cup test when milk consistency and color were evaluated. Immediately after, an aseptic milk sample was collected from each health quarter for the microbiological examination (National Mastitis Council, 1987). Milk samples sent under refrigeration to the laboratory were inoculated in blood agar base (5% ovine blood) and in MacConkey agar. After incubation under aerobic conditions at 37°C for 72 hours, growth was observed daily and microorganisms identification was performed according to the colonial characteristics, verification of tintorial and morfological shape under Gram staining methods and biochemical tests according to Quinn et al. (1994).

**RESULTS AND CONCLUSION:** The occurrence of clinical mastitis among the 734 quarters evaluated was nule. Under the incubation conditions offered in the present study, 580 microorganisms were isolated, all of them bacteria. Among them, 182 (31,38%) were recovered from samples collected during the rainy season and 398 (68,62%) from the dry season.

During the nine months interval, the most prevalent agents were: *Corynebacterium* sp (47,67%) and *Staphylococcus* sp (19,17%). Different from the findings of Costa et al. (1997a) who found *Staphylococcus* sp and *Corynebacterium* sp as the most frequent agents in clinically normal milk samples submitted to microbiological exams. In another study with similar samples in Vale do Ribeira, Costa et al. (1997b) also observed mainly *Corynebacterium* sp in 59,25% and then *Staphylococcus* sp. in 17,59%. The evaluation of subclinical mastitis in buffalo herds from São Paulo State, Costa et al. (2000) revealed *Staphylococcus* sp. in 20,97%, *Corynebacterium* sp. in 19,76% and *Streptococcus* sp. in 16,94%. In these cases, coagulase negative *Staphylococcus* sp. was statistically lower than coagulase positive ones. In 154 milk samples from Murrah buffalo cows presenting subclinical alterations, Langoni et al. (2001) isolated *Corynebacterium bovis* (31,7%), *Staphylococcus epidermidis* (30,5%), *Streptococcus agalactiae* (26,9%), *Staphylococcus aureus* (4,9%), *Actinobacter calcoaceticus* (2,4%), *Pasteurella multocida* (2,4%) and *Bacillus* sp. (1,2%).

Among the isolated agents, in the rainy period the most prevalent were: *Corynebacterium* sp (53,30%), *Staphylococcus* sp (19,78%) and *Rhodococcus equi* (13,74%) (Figure 1). In the dry months the commonest ones were: *Corynebacterium* sp (44,97%), *Staphylococcus* sp (18,84%) and *Micrococcus* sp (9,55%) (Figure 2). The contagious agents were the most frequent ones during the whole year probably because the animals were kept under a semi-intensive system on pasture with no access to water collections.

The results demonstrated that physical exams of udder and secretion analysis with strip cup tests to select health quarters in brazilian dairy buffalo farms allow the transmission of contagious bacteria during both seasons of the year, maintaining agents known to cause mainly subclinical inflammatory reactions that compromise cronically the physiology and production of the mammary gland.

Figure 1. Distribution of contagious and environmental mastitis agents isolated from milk samples collected in rainy season

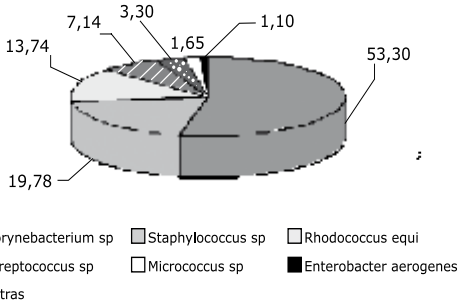
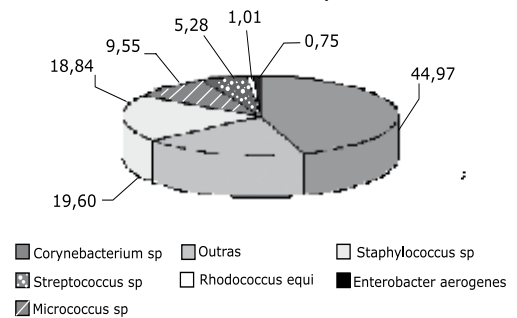


Figure 2. Distribution of contagious and environmental mastitis agents isolated from milk samples collected in dry season



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