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**Microbial Colonization on Teat Skin with or without Hyperkeratosis: Distribution and Persistence**

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**Abstract:**

**Background/Objective:** The teat skin acts as a microorganism reservoir, potentially increasing the risk of mastitis development. This study aims to investigate the distribution and persistence of microbial colonization on teat skin, considering both cases with and without hyperkeratosis.

**Methods:** The study was conducted on a small dairy farm of Mae-on dairy cooperative, Chiang Mai, Thailand, where the bulk tank somatic cell count (BTSCC) exceeds 500,000 cells/ml. Twenty cows with no history of clinical mastitis were assessed for teat end hyperkeratosis. Seventy-four teat skins were swabbed before and after milking using a modified wet swab technique. The total number of aerobic mesophilic bacteria was determined using the drop plate technique. Gram-negative bacteria were detected using MacConkey agar, whereas Streptococci and Staphylococci were identified using Edwards modified medium and Baird-Parker agar, respectively.

**Results** All bacterial group were identified on teat skin both with and without hyperkeratosis at the teat apex. Among the 74 teat samples, 45 (60.81%) tested positive for bacterial isolates. The most common bacteria found on teat skin were Staphylococci, accounting for 95.55%. Additionally, there were case of co-infection with Streptococci (34.88%) and Gram-negative bacteria (20.93%). Prior to milking, bacterial colonization loads varied, range from 25 CFU/ml – 5.2 x 103 CFU/ml across all isolates. Staphylococci were found at high levels with 5.2 x 103 CFU/ml, whereas other bacterial group were present at lower levels compared to the Staphylococcal group. In addition, Staphylococcal group was observed after milking interval at 30 and 60 minutes, particularly in the hyperkeratosis apex. In this group, 62.5% of Staphylococcal colonies ranged from 30 CFU/ml – 1.4 x 103 CFU/ml.

**Conclusion:** In conclusion, the study emphasizes the significance of teat skin bacterial load with Staphylococcal, Streptococcal, and Gram-negative bacterial group able found before milking and Staphylococcal group posing a high risk of reinfection especially in the teat skin with hyperkeratosis apex.

**Keywords:** Microbial colonization, Teat skin, Persistence