

# Resistance to ampicillin and oxytetracycline in bacteria isolates from healthy and mastitis infected dairy cow milk.

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Decreased milk production in dairy cattle due to infection of the udder known as mastitis costs the United States dairy around two billion dollars each year. Antibiotic resistance of these pathogens increases loss as treatment effectiveness decreases. The objective of this study was to determine the extent of resistance to antibiotics oxytetracycline and ampicillin in bacteria associated with dairy cow milk. Milk of cows exhibiting clinical (n=4), sub-clinical(n=7), and no mastitis (n=4) was collected. Sample bacteria were enumerated on MacConkey agar with 1% glucose (MAC), Trypticase soy agar with 5% sheep blood (TSAB), and Staphylococcus Medium No. 110 (SA110), supplemented with either ampicillin or oxytetracycline. Resistant isolates were further screened for multi-drug resistance. Multi-drug resistant isolates were subjected to the polymerase chain reaction (PCR) for resistance genes tet(B), tet(M), tet(O), tet(Q), tet(W), and blaCTX. Phenotypically resistant bacteria were isolated from samples of both healthy cows and cows with clinical and sub-clinical mastitis. Gram-negative bacteria appear to be less common in cow's milk and have lower resistant bacterial count. Our study did not reveal any correlation between resistant bacteria count and status of infection (healthy, sub-clinical and clinical mastitis), nor any resistance genes in multi-drug resistant isolates. Further research is needed to reveal resistance mechanisms in these isolates. A better understanding of the nature and extent of resistance in bacteria related to mastitis will allow producers to make prudent decisions on treatment with antibiotics and therefore minimize development of antibiotic resistance in the dairy environment.