

Clinical Mastitis Caused by Coagulase-Negative Staphylococci in Canadian Dairy Herds

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The coagulase-negative staphylococci (CNS) consist of more than 50 species, and are the most frequently isolated pathogens from udder quarters. However, little is known about the impact of CNS species on udder health and milk production. Additionally, the lack of a standard technique to identify this group represents a major challenge to the understanding of the CNS udder infection epidemiology. High-resolution melt analysis (HRMA) has shown to be a very reliable and accurate technique for bacterial identification. A speciation for CNS using HRMA was developed which made identification of *Staphylococcus chromogenes*, the most frequently found CNS species, possible. All isolates that did not cluster with *S. chromogenes* in HRMA were genotyped by sequencing of *ropB* gene.

CNS species isolated from quarter milk samples were obtained from the Canadian Bovine Mastitis Research Network. Among the 6452 CNS isolates available, 1200 are already identified, 97 being from clinical mastitis cases. The most frequently CNS species isolated are presented in Table 1. *S. simulans* and *S. sciuri* were more frequently found in clinical mastitis cases than *S. chromogenes*. Additionally, four different genotypes of *S. chromogenes* were found; two of them were more frequently found in clinical mastitis.

CNS clearly cannot be seen as one group. Some of the species are real udder pathogens, while other CNS species may even protect against infection by major udder pathogens or even against clinical mastitis. We are planning to identify the genes that cause the difference between these CNS species.

Table 1. Distribution of most common species of CNS in quarters with low SCC, subclinical and clinical mastitis.

Species	Low SCC (<200,000 cells/mL)		High SCC (> 200,000 cells/mL)		Clinical mastitis	
	N	%	N	%	n	%
<i>S. chromogenes</i>	396	58	199	57	28	29
Genotype 1	232	63	114	57	13	45
Genotype 2	22	6	9	5	3	10
Genotype 3	72	18	51	26	11	40
Genotype 4	65	16	25	13	1	3
<i>S. haemolyticus</i>	38	5	28	8	6	6
<i>S. simulans</i>	88	13	36	10	21	22
<i>S. xylosus</i>	59	9	20	5	5	5
<i>S. epidermidis</i>	19	3	21	5	3	3
<i>S. cohnii</i>	6	1	7	3	2	2
<i>S. equorum</i>	10	1	2	0.5	3	2
<i>S. devriesei</i>	3	0.5	5	1	4	4
<i>S. gallinarum</i>	7	1	3	1	2	2
<i>S. arlettae</i>	5	1	1	0.3	4	4
<i>S. sciuri</i>	12	2	7	2	9	9
Others	22	4	8	3	13	13
Total	702	100	374	100	97	100