

Coagulase-negative *Staphylococcus* species causing intramammary infection and their presence in cow's environment

V Piessens^{1,*}, S De Vlieghe², B Verbist¹, K Supré², G Braem³, L De Vuyst³, M Heyndrickx¹, E Van Coillie¹

¹Institute for Agricultural and Fisheries Research (ILVO), Food Science and Technology Unit, Melle, Belgium; ²Dept. Reproduction, Obstetrics, and Herd Health, Faculty of Veterinary Medicine, Ghent University, Belgium; ³Research Group Industrial Microbiology and Food Biotechnology, VUB, Brussels, Belgium

*Veerle.Piessens@ilvo.vlaanderen.be

In many prevalence studies of mastitis pathogens worldwide, coagulase-negative staphylococci (CNS) are found to be the predominant group of organisms causing intramammary infection (IMI). Although CNS are considered as mild pathogens, they are a known cause of clinical mastitis and can persist for long periods in the mammary gland. Origin of CNS mastitis is unclear and more research on and beyond the CNS species level is needed. In the present study, epidemiology and significance of different CNS species is studied with an emphasis on CNS present in cow environment.

A 1-year longitudinal study was conducted on 6 Flemish dairy farms. Environmental samples and quarter milk samples of a selection of cows (10 cows/herd) were taken monthly for isolation of CNS. The same cows were followed to determine persistence of IMI. Isolates from milk ($n = 134$) and environment ($n = 648$) were analyzed by AFLP¹ for species identification and subtyping. *Staphylococcus sciuri*, *S. equorum* and *S. haemolyticus* were the predominating CNS species in cow's environment. The main CNS species in milk were *S. chromogenes*, *S. haemolyticus*, *S. epidermidis* and *S. simulans*. Quarters were often chronically infected for several months by the same AFLP-type. Moreover, same AFLP-types were found between milk isolates and isolates originating from the environment.

Results indicate that possible sources of CNS causing IMI exist in the environment. Preference for colonization of the udder, the environment or both varied among species, so origin of infection might differ depending on causative CNS species. Currently, further epidemiological study of isolates from both niches is done using RAPD. Furthermore, virulence is investigated by determining antibiotic/biocide resistance patterns and presence of biofilm associated genes.

¹V. Piessens et al. (2010) J. Microbiol. Methods 80: 287-294