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Isolation of toxigenic *Clostridium difficile* from raw bovine milk and the environment: a risk for public health?

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Abstract

Clostridium difficile is an emerging enteric pathogen of humans and animals. Health care associated and community-acquired *C. difficile* infection (CDI) are on the increase world-wide. The hypothesis of a zoonotic route of human CDI takes grounds from the coming out of the toxigenic ribotype 078, commonly found in pigs and calves, as cause of human CDI outbreaks in several countries. One hundred and thirty-two samples of raw bovine milk and 1 sample of raw ovine milk collected in southern Italy were analyzed. *C. difficile* ribotypes 018 and 078 were isolated from 5 samples of bovine bulk tank milk. Despite the frequent isolation of C. difficile from bovine in Western countries, this is the first report dealing with the isolation of *C. difficile* from bovine milk. Although nowadays there is no evidence of the acquisition of CDI through the ingestion of contaminated dairy products, the recovery of *C. difficile* in milk products highlight a possible risk for public health due to the ineffectiveness of the standard milk pasteurization treatment in killing bacterial spores. We also isolated *C. difficile* ribotypes 078, 018, 001, 014, 106 and 126, in several environmental matrices in Southern Italy and Southern Switzerland. C. difficile shows a widespread environmental diffusion suggesting a possible environmental route, in addition to the zoonotic one, of exposure to this bacteria.

Biography

Vincenza Romano got a Ph. D. in 2012 from University of Naples “Parthenope”. She works as research collaborator at the same University. Her main research interests fall within the field of Environmental and Food Microbiology. In particular, over the last 5 years, her main activities focused on isolation, molecular identification, typing and virulence factors of *Clostridium difficile* coming from different matrices, in order to determine the prevalence of clinically relevant ribotypes in the community and their possible reservoirs. Other research interests include detection and identification of virulence factors in several foodborne and zoonotic pathogens.