ABSTRACT

Authors Jessica Varela-Villarreal, Thomas Schwartz, and Ursula Obst

Drinking water that comes from the public suppliers is not sterile, it contains a number of autochthonous and mostly harmless bacteria. But, pathogenic or opportunistic bacteria may enter drinking water facilities in case of irregular operating conditions. In this case, some of these bacteria are able to persist and become distributed to food production. Thus, drinking water is controlled in the framework of PathogenCombat as a possible source of contamination during food production. If pathogen find their optimal growth conditions (like pH, nutrient, humidity and temperature) a proliferation and transfer to humans seems to be possible.
Our challenge in this project is to detect pathogenic bacteria in the water of food industry and to look for possible water-derived critical control points in the production lines.
Culture-independent techniques as PCR and Real Time q-PCR, were applied to specifically detect *Listeria monocytogenes, Mycobacterium avium subsp. paratuberculosis, Campylobacter jejuni, Enterococcus ssp, Salmonella ssp, Escherichia coli,* and *Pseudomonas aeruginosa* in water distribution systems of two German food industries. Molecular biology fingerprint analyses were also performed to compare bacterial population similarities for the identification of possible critical control points at the SMEs. The new technologies were applied at a total number of 13 sampling points at the two SMEs (dairy and poultry).
.