Tecnologie Analitiche Avanzate
AAT
Advanced Analytical Technologies

Spin-off
Università Cattolica
del Sacro Cuore

Bactericidal and fungicidal efficacy of dry steam

Study sponsored by GENERAL VAPEUR and E V international® Ecological Value

Objective

Evaluation of the efficacy of dry steam treatment realised by E V International dry steam cleaners in order to clean surfaces contaminated by bacteria and fungi.

Reference

Trials were based on the European Regulation related to chemical disinfectants and antiseptics with the aim to evaluate the ability of dry steam to decrease bacterial and fungi contamination of surfaces.

List of EU rules:

EN 1040:2005 EN 1275:2006 EN 1276:2000 EN 1650:2000

Methods

One billion of colony forming units of each microorganism were uniformly distributed on a polymeric surface (as used in food industry), previously cleaned to remove any contamination. After the distribution of the test microorganism, the surface was treated with saturated dry steam. At the end of the treatment, bacteria on the surface and in the residual condensation liquid were sampled and lab analysed by sterile pads.

Results

In vitro trials demonstrated that the treatment with saturated dry steam was effective in the reduction of bacterial and fungal contamination of surfaces

The analytical values of bacterial and fungal contamination after treatment were always below the levels indicated by the EU rules that refer to a decrease of $10^{\#}$ UFC for fungicides and $10^{\%}$ UFC for bactericides.

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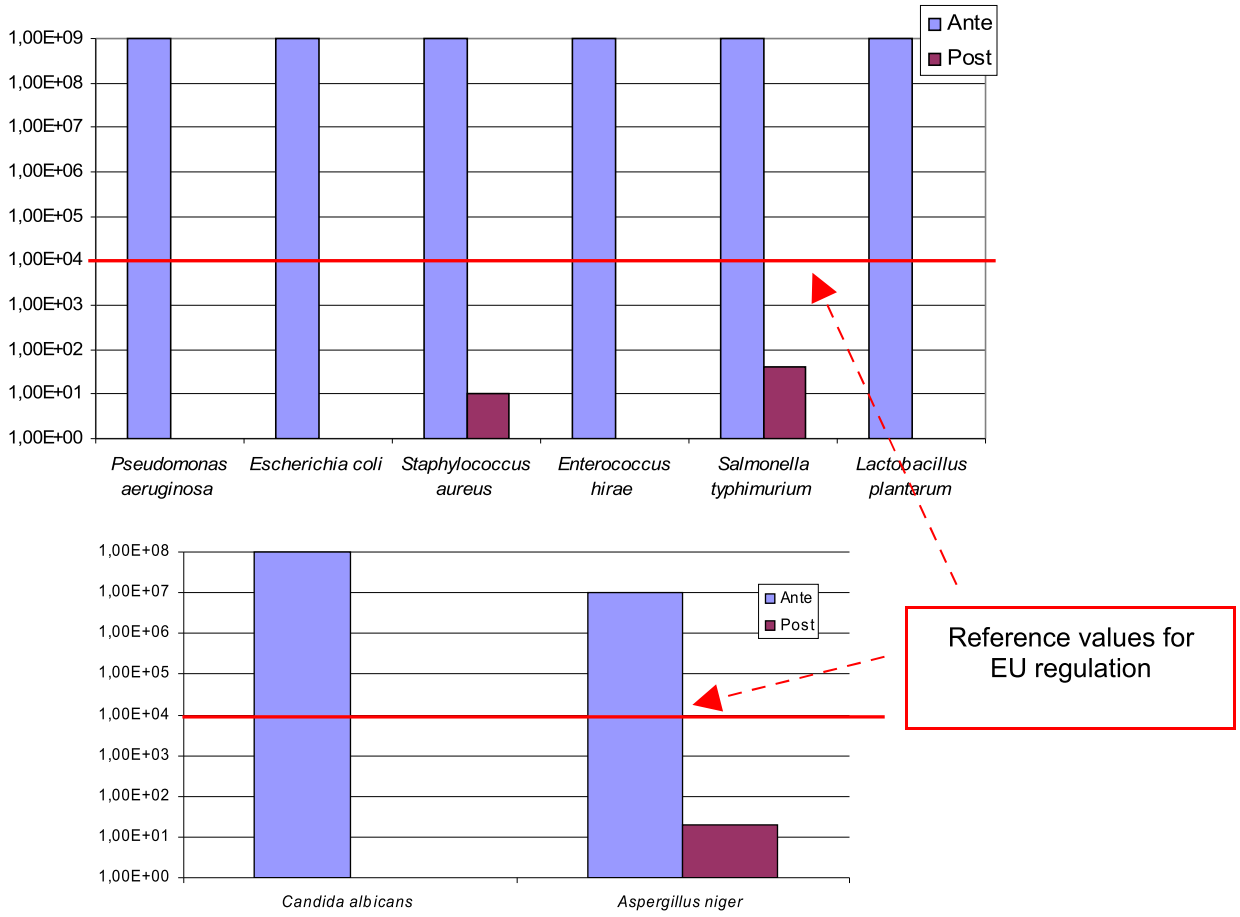
Results and graphs at sh. 2 →

Results

Code	Microbial species	Strain	Sampling	Pre-treatment count (CFU/4.000cmq)	Post-treatment count (CFU/4.000cmq)	Quantification
08F09712	*Surface check before treatment*				< LQ (#)	0,00E+00
08F09719	*Pseudomonas aeruginosa*	ATCC 15442	surface	1,00E+09	< LQ	0,00E+00
08F09720	*Pseudomonas aeruginosa*	ATCC 15442	surface	1,00E+09	2,00E+01	2,00E+01
08F09715	*Escherichia coli*	ATCC 10536	surface	1,00E+09	< LQ	0,00E+00
08F09713	*Staphylococcus aureus*	ATCC 6538	condensation	1,00E+09	< LQ	0,00E+00
08F09714	*Staphylococcus aureus*	ATCC 6538	surface	1,00E+09	1,00E+01	1,00E+01
08F09716	*Enterococcus hirae*	ATCC 10541	surface	1,00E+09	2,00E+01	2,00E+01
08F09724	*Enterococcus hirae*	ATCC 10541	surface	1,00E+09	< LQ	0,00E+00
08F09725	*Enterococcus hirae*	ATCC 10541	surface	1,00E+09	< LQ	0,00E+00
08F09717	*Salmonella typhimurium*	ATCC 13311	surface	1,00E+09	4,00E+01	4,00E+01
08F09718	*Lactobacillus plantarum (*)*	DSM 6235	surface	1,00E+09	< LQ	0,00E+00
08F09721	*Candida albicans*	ATCC 10231	surface	1,00E+08	< LQ	0,00E+00
08F09722	*Aspergillus niger*	ATCC 16404	surface	1,00E+07	2,00E+01	2,00E+01
08F09723	*Aspergillus niger*	ATCC 16404	condensation	1,00E+07	< LQ	0,00E+00



Complete results and reports are available at E V International Ltd. and can be supplied to the customers following request