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Topic: *Salmonella* reduction by means of infrared illumination

File reference: Validation procedures IRD infrared *Salmonella* reduction

Report No.: 16-PS001

16-ps001-eng

Content:

The present report assesses whether a reduction to 10^5 CFU units of possible *Salmonella* exposure of dry products by the treatment with the KREYENBORG - IRD infrared germ reduction process could be achieved.

Construction of tests:

Since working with *Salmonella* was not possible, an *Enterococcus faecium* (ATCC® 8459™) was used for the experiment. This type corresponds largely in its behavior to *Salmonella ssp.* In order to produce an extremely high contaminated goods¹ with germs, sesame seeds were loaded under standard conditions in the pilot plant with 10^6 CFU /g² [6,000 g Sesame with 100 ml of a solution containing approximately 10^8 *E. faecium*]. This good was subjected immediately to the infrared treatment. In each case a sample was taken before and three samples were collected after each treatment (Temperature : 95 ° C, 105 ° C and 120 ° C). Afterwards they were given to the microbiological examination. This procedure was performed three times for each temperature level.

Results and evaluation:

In each sample the "Compare germ" *Enterococcus faecium* (ATCC® 8459™) was certainly reduced to $>1 \times 10^5$ CFU, the proportion caused by natural decrease was factored in. However, this also corresponds to the effects of natural contamination. Likewise, the result corresponds to the report 15-Ps: 01 with heavily germ contaminated fennel. Here the Enterobacteriaceae and the UFC were also reduced by a factor of $10^{5\text{th}}$.

¹ Such a high contamination is unlikely, but this was chosen in order to determine the reduction rate of 10^5 .

² The values obtained in the test were determined 24 hours after inoculation. In a preliminary experiment, the mortality rate in this period was at the factor 10^2 .

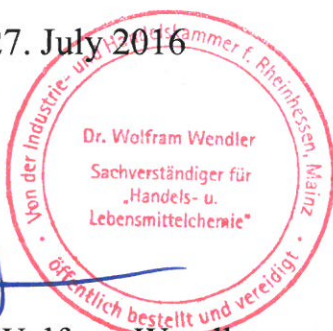
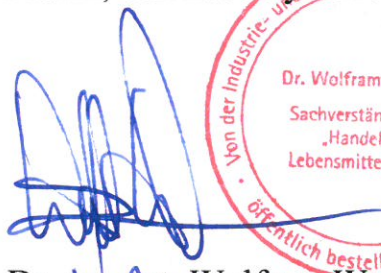
Summary:

Germ reduction by means of infrared light is in microorganism, that match those of *Salmonella ssp.*, over the factor of 10^5 CFU was successful, it is also suitable for disinfecting heavily contaminated goods.

Applied documents:

- Test reports
- experimental procedures
- ATCC information

Mainz, den 27. July 2016



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