



## **Method for removal of salmonella from contaminated peanuts:**

### **Background:**

Nuts in whole and peanuts in particular have been identified as a likely source of pathogens in foods. Salmonella has been found to be extremely resistant after forming biofilm on peanuts. Traditional treatment methods, such as roasting, have proven insufficient, and the peanut industry has been facing recalls and was forced to upgrade its procedures. The combination of a resilient salmonella and the small infective dose is especially problematic.

### **Nature of treatment:**

Foodlab has been able to show, in the lab, that a specific series of steps, all non-destructive and with GRAS materials, has been able to remove  $10^7$  of salmonella that has produced resilient biofilm on peanuts. This sequence is believed to be well suited for the industry, relatively inexpensive and with low energy input.

### **Inoculation:**

Shelled runner peanuts were bought from a local dealer. The source of the peanuts is unknown. Peanut have been inoculated by means of submerging in a salmonella Newman rich broth. After drying, a population of  $10^9$  was confirmed on the peanuts.

### **Treatment:**

Initially, more than 20 different treatment methods, that did not involve roasting, were tested. The current recommended method comprise of three different stages that act in synergy. All treatments use GRAS materials. The process takes about two minutes and has relatively low energy requirements. An illustration of how to implement the process on industrial scale has been prepared, as well as a small lab-size device. The treatment has been done on small scale lab batches only.

## Results:

A reduction of  $10^7$  in the salmonella count has been shown. One should note that all processes were partly effective, but only a combination of all three treatments showed the above mentioned result. Sensory evaluation of the treated nuts has confirmed that peanuts were not defected during treatment.

## Status and further steps:

The treatment has shown phenomenal results with peanuts, and is likely to be efficient with similar food staff such as nuts and spices.

The treatment has been proven on small scale lab samples and therefore there is a need for scale-up design and proof. Further steps will include a pilot device, other food staff validation and commercialization.

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