

# Inactivation of *Salmonella Typhimurium* in pesto with high-pressure processing (HPP)



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## Introduction

*Salmonella* is one of the leading causes of foodborne illness and diarrheal diseases worldwide. High-pressure processing (HPP) is an alternative to thermal processing to inactivate microbes in packed food products improving their shelf-life and the food safety. However, in some foods oil has shown a protective effect resulting in minimal inactivation of *Salmonella* in HPP. This study examined the efficacy of HPP to inactivate *S. Typhimurium* inoculated into green pestos with various oil content.



HPP machine at Toriipiha Oy in Suonenjoki. Photo by Elina Väliky, SavoGrow



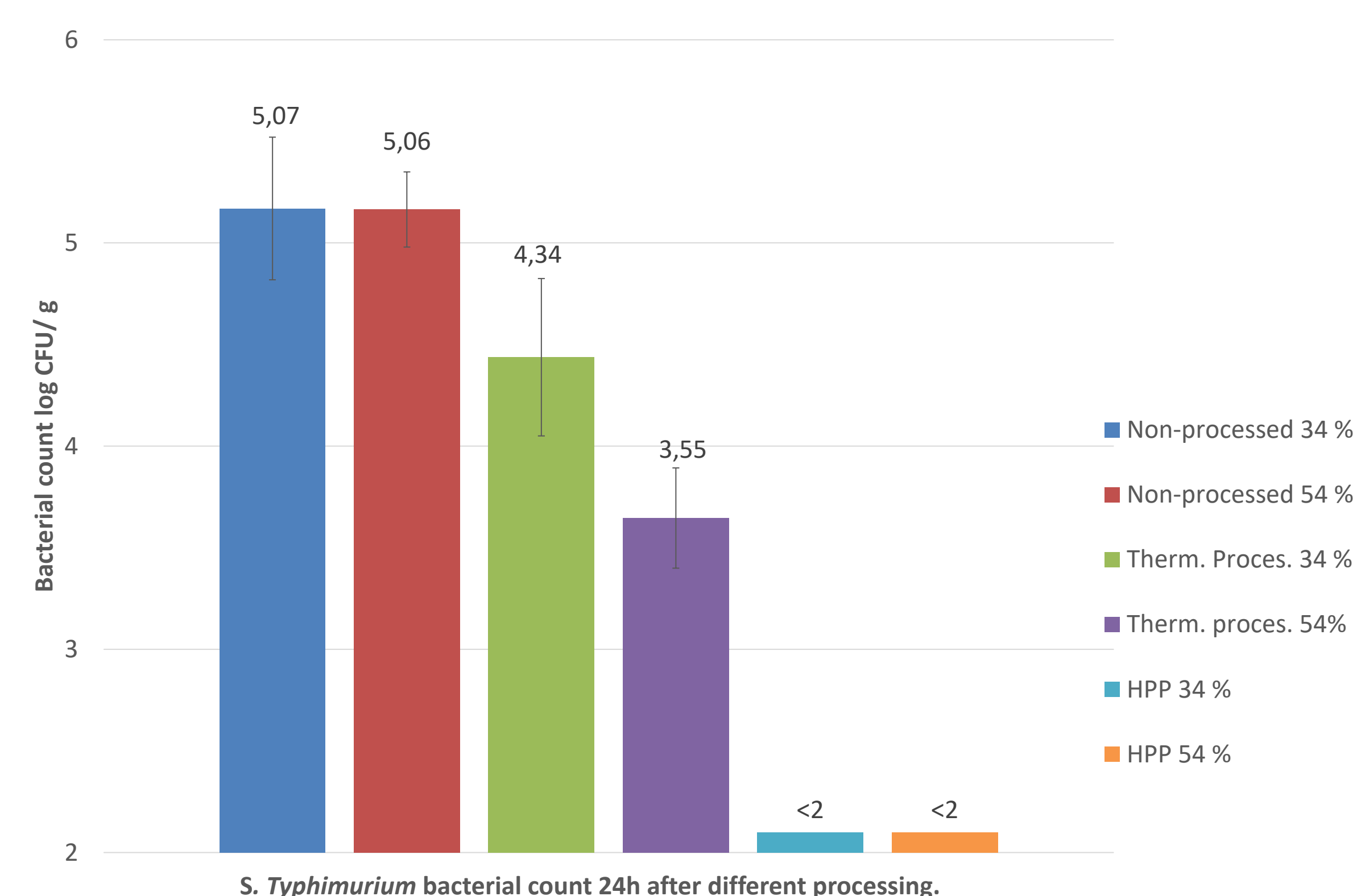
*S. Typhimurium* colonies on XLD agar plates: non-processed sample (left), thermally processed sample (centre) and HPP-processed sample (right) at 24 h sampling point.

## Results

**HPP:** No *Salmonella* (< 100 CFU/g) was found after HPP in pestos.

**Thermal processing:** *Salmonella* count was decreased to 10<sup>4</sup> CFU/g at 24 h sampling point and to < 200 CFU/g at 30 d.

No salmonella was found at 60 d sampling point, not even from non-processed samples.



## Materials and methods

Pestos with 34 % or 54 % oil content were inoculated with 10<sup>6</sup> CFU/g *S. Typhimurium* ATCC 11331 strain. The samples were processed with HPP (600 MPa, 3 min), with thermal processing in a water bath (82°C, 5 min) or remained unprocessed. Microbial analysis (plating on xylose lysine deoxycholate (XLD) modified agar) was done for *Salmonella* at three time points: 24 h, 30 d and 60 d after processing.

## Conclusions

HPP (600 MPa, 3 min) effectively inactivated *Salmonella* in the pesto samples. There is potential antimicrobial activity in pesto inhibiting the growth of *Salmonella*.



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