Hes·so VALAIS WALLIS
School of Engineering

RESEARCHPROJECT

Institute Life Technologies

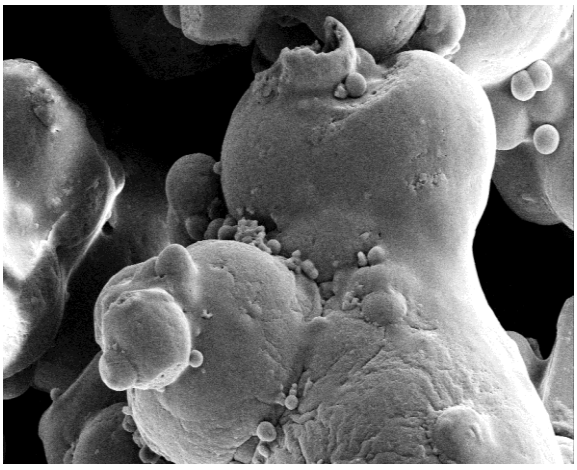
Structure induced kinetic of thermal inactivation of microorganisms on the surface of fine particulate food systems

Partner(s) Swiss Federal Institute of Technology in Zurich (ETHZ), HOCHDORF Nutritec, DSM, DEC Group, HES-SO VS

Financial support from the Commission for Technology and Innovation - CTI (No. 11454.1 PFLS-LS) is gratefully acknowledged.

Collaborator(s) Josef Hörmansperger, Rudolf Schmitt, Erich Windhab, Michael Beyrer

Description Microbial decontamination of powdered foods is much more problematic than of liquid foods. Therefore, food powders exceeding a critical microbial load are generally disposed in industry. A waste-reducing industrial, conventional thermal decontamination requires high energy input for sufficient bacterial inactivation, resulting in organoleptic product degradation. This can be diminished by an equivalent treatment at high temperature and short time (HTST).
Such an appropriate process is the so-called vacuum-steam-vacuum (VSV) treatment, which has not yet been studied for the application for sensitive food powders. In the VSV process, the heat transfer is increased through the absence of air and the resulting improved surface condensation after steam injection. A subsequent vacuum leads to re-evaporation of the condensate and simultaneous cooling of the treated product.
The aim of this project was to develop new pilot plant scale equipment and processes for inactivation of micro-organisms on food powders. The VSV treatment was executed in a fluidized bed. Kinetics of inactivation for different microorganisms including spores was determined and the impact of powder particle porosity on heat transfer and thus inactivation kinetics was studied (Hörmansperger et al., 2016; Mühlich et al., 2016).



Milk powder particles

URL http://itv.hevs.ch

Contact Michael Beyrer, PhD
michael.beyrer@hevs.ch
T +41 27 606 86 54