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### Hop extracts – A natural antimicrobial for ensuring food safety

The common hop (*Humulus lupulus*) produces numerous bioactive compounds, such as the beta-acids. They show lower bitterness than alpha-acids, but high antibacterial activity - especially against Gram-positive microorganisms like *Listeria* spp. Those bacteria can lead to food-borne illnesses and microbial food spoilage. Especially fresh and minimally processed food is not protected against microbial contamination. Antimicrobial substances can minimize the inherent microbiological risk of fresh products and are even able to prolong their shelf-life and increase quality. On the other hand, chemically synthesized preservatives get more and more rejected by the consumer. Natural substances are preferred instead. In this study, we investigated the potential of beta-acids containing hop extracts as natural antimicrobials for food preservation against selected foodborne pathogens *in vitro* as well as their activity against *Listeria* spp. directly on fresh food products. Another important aspect of our investigation was the physicochemical behavior of the extracts at different processing conditions and product matrices. The experiments showed that Gram-positive bacteria were strongly inhibited by hop extracts containing beta-acids. Gram-negative bacteria were highly resistant against all tested hop extracts. The inhibitory activity of the hop extracts against *Listeria* on food could also be demonstrated. Consequently, antimicrobial hop extracts could be used as natural preservatives in food applications to extend the shelf-life and to increase the safety of fresh products.

### Biography

Carolyn Hauser has completed her PhD in Food Chemistry from Friedrich-Alexander University Erlangen-Nuremberg, Germany and her Post-doctoral studies from University of Santiago de Chile in 2014. In 2016, she was selected as Eleonore-Treffitz Visiting Professor at the Technische Universität Dresden. She is a Business Field Manager for Food at the Fraunhofer Institute for Process Engineering and Packaging IVV, Germany. Fraunhofer is the biggest research organization for applied science in Europe. Her research field is preservation of packaged food and food quality. She presented her work in many international congresses and published papers in reputed journals.

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