

# Food Safety and Hygiene

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# Nutrition, Food Science and Technology

March 07-09, 2019 | London, UK

## Use of plant essential oils to inhibit *Salmonella* enterica in Hummus

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**Aims:** Screen the antimicrobial activity of different essential oils against *Salmonella* and investigate the inhibitory effect of cinnamon or thyme oils against *Salmonella* and mesophilic aerobic bacteria (MAB) in hummus.

**Methods and Results:** Different essential oils (thyme, sage, cardamom, laurel, rosemary, cinnamon, ginger, fir) were tested against 5 *Salmonella* serotypes. *Salmonella*-inoculated Hummus was treated with 0.5 to 1.5% thyme or cinnamon oils (which exhibited the highest antimicrobial activity using disc-diffusion method with inhibition zones of 22.5-38.5 mm in diameter) and stored at 4 or 10°C. *Salmonella* cells were not detected in Hummus treated with 0.5-1.0% cinnamon oil by 7 and 1 d, respectively, at 4 or 10°C. Cinnamon oil at 0.5-1.5% reduced the MAB in Hummus by 1.3-4.6 log CFU/g at 4 °C. However, addition of 0.5-1.5% thyme oil into Hummus reduced *Salmonella* by 1.0-2.9 log CFU/g, respectively, at 4°C by 10 d. Thyme

oil also inhibited growth of MAB in Hummus and the count remained constant until the end of storage period at 4°C. While at 10°C, thyme oil showed lower inhibitory effect.

**Conclusion:** Cinnamon and thyme oils were effective in inhibiting *Salmonella* in Hummus.

**Significance and Impact of Study:** Using cinnamon and thyme oil may improve the safety and extend the shelf-life of Hummus.

### Speaker Biography

Mahmoud Abughoush has completed his PhD in food chemistry, food safety and processing in 2003 from Kansas State University / USA in the field of food science. He is associate professor at the Hashemite University / Jordan. He has published more than 30 papers in reputed journals. Now, Abughoush is the Dean of applied and Medical Science College at the Hashemite University, Jordan.

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