

Provisional Book of Abstract

ASPA 26th Congress Turin (ITALY), June 17–20, 2025

#ASPA2025

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The 26th congress of the Animal Science and Production Association

“Innovations in animal sciences: shaping the way for a sustainable future is under patronage of

***Turin (ITALY),
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Venue

***Campus SAMEV (Scuola di Agraria e medicina Veterinaria)
Largo Braccini 2, Grugliasco (TO)– ITALY***

SESSION 41
***Food quality:* DAIRY PRODUCT QUALITY AND CHEESEMAKING PROPERTIES**

Exploring natural additives for cheese preservation

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Fresh cheese is a common highly perishable dairy product due to its composition and storage conditions, which promote fungi and bacteria's growth on its surface, leading to quality reduction, economic losses and health risks. To address these challenges, the dairy industry is focusing on extending shelf-life and enhancing quality and safety, with natural additives that are in high demand by consumers. The project aimed to develop essential oil (EO)/plant extract (PE) with antimicrobial and antifungal activity for application as a protective coating on fresh cheeses. Given the instability and sensitivity of EO and PE to light, moisture and air, nano-emulsions represent a promising protective solution to stabilize these compounds, preserve their activity during storage and improve solubility in fresh cheese formulations. Commercial sunflower oil was selected as the reference oil due to its cost-effectiveness, widespread availability, neutral taste and odor. Their stability was evaluated up to 72 h after preparation at room temperature. Four types of coating based on monoglycerides, sodium alginate, isolated soya proteins and cheese-making whey proteins were tested with 3 oil concentrations. The coating solutions were characterized in terms of total soluble solids content, viscosity, surface tension, and pH. Mini-cheeses were produced using 2 L of milk and coated via 3 different methods: electrostatic spray, immersion (for 60 seconds) and brushing. Coating thickness and microstructure were measured in the 24 h post-application, and texture, color, weight loss, and hardness were assessed over 30 days of ripening. Preliminary results indicated the stability of emulsions across the different coating types. Only monoglycerides-based emulsions containing 0.5% and 1% oil, and pH 7.5 and 7.49, respectively, displayed constant viscosity. Sodium alginate-based emulsions containing 1%, 3% and 5% oil, with 1% alginate and 5% whey protein were evaluated as stable, exhibiting a pseudoplastic viscosity trend and neutral pH. Soy protein-based emulsions behaved like Newtonian liquids with constant viscosity, stable at oil concentrations of 1%, 3% and 5%, and pH 7.5-7.7. Similarly, whey protein-based emulsions 1%, 3% and 5% oil were stable, with constant viscosity and Newtonian liquids behavior. In conclusion, a total of eleven stable emulsions were identified as viable for use in cheese coating, offering promising potential to enhance cheese preservation during ripening.

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