

Effect of edible coating and storage temperature on gas exchange of Regional Cheese

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The application of coating has been widely studied for horticultural products, as fruits and vegetables, while hardly explored for dairy products. Cheese releases CO₂ and simultaneously consumes O₂ during the life cycle; the control of the gas exchange is required to maintain the cheese quality and increase its shelf-life. The main objective of this work was to analyze the influence of two different coatings (galactomannan and chitosan) and storage temperature on the gas exchange rate of *Regional cheese* (hard - cheese). The closed system method with air as initial atmosphere was used to determine the gas exchange rate of whole cheese (with or without coating, at different temperatures (4, 12 and 20 °C).

O₂ consumption rate ranged between: 0.335 and 0.195 ml kg⁻¹ h⁻¹; 0.540 and 0.375 ml kg⁻¹ h⁻¹; and 1.45 and 0.635 ml kg⁻¹ h⁻¹ at 4, 12 and 20 °C respectively, while CO₂ production rates varied between: 0.265 and 0.125 ml kg⁻¹ h⁻¹; 0.425 and 0.20 ml kg⁻¹ h⁻¹ and 2.25 and 0.90 ml kg⁻¹ h⁻¹ at the mentioned temperatures. For all the studied temperatures the samples without coating presented the higher O₂-consumption and CO₂-production rates. Temperature was also found to have an important effect on RO₂ and RCO₂, its influence was well described by an Arrhenius equation, yielding coefficients of determination, R², of 0.85 and above.

Use of edible coatings and reduction of the storage temperature could be used to reduce RO₂ and RCO₂ of cheese thus favouring its shelf-life extension.