

MOZZARELLA CHEESE PRODUCTION, QUALITY AND AUTHENTICATION

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JUNE 2018



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Objetives

To study the production process and characteristics of Mozzarella cheese, to know the main differences between this product made with buffalo milk and cow milk and to evaluate the authentication methods for the Mozzarella di Bufala Campana DOP

Mozzarella di Bufala Campana DOP

This type of cheese is originated in Italy in the regions of Campania and Lazio, these being the only locations in the world that can use the authenticity stamp of 'Campana Buffalo Mozzarella', which is a protected origin denomination (POD) regulated by European Union law (CE) N° 510/2006

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Buffalo's milk vs. Cow's milk

Table 1. Concentration (% w/w) of the main constituents in buffalo's milk and cow's milk (Sindhu et al., 2011).

Nutrient (%)	Buffalo	Cow
Water	83,2	87,2
Total Solids	16,3	12,8
Fat	6,7	3,7
Protein	4,7	3,5
Lactose	4,6	4,9

Authentication Methods

Technique	Analysis	Sensitivity	Speed	Cost
Chromatography	Protein (casein)	High	Slow	High
Electrophoresis	Protein (peptides)	High	Slow	High
ELISA	Immunoassay	High	Fast	Low
PCR	DNA	High	Fast	Low



Conclusions

There are significant compositional differences between buffalo and cow milk, especially protein and fat, which can affect both the production process and the final quality product.

The classic techniques used to study the presence of cow milk in buffalo cheesemilk are those based on peptide profile, as chromatography and electrophoresis. However, ELISA and PCR are now being implemented and they can be better applied to the routine, due to the fact that they are faster and cheaper with the same sensitivity.



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Production process

