

UNIVERSIDADE FEDERAL DE VIÇOSA  
CENTRO DE CIÊNCIAS EXATAS E TECNOLÓGICAS  
DEPARTAMENTO DE TECNOLOGIA DE ALIMENTOS

*Campus Universitário – Viçosa, MG – 36570-900 – Telefone (31)3612-6705/6760 - E-mail: dta@ufv.br*

---

**TAL 797 – Seminário  
16/10/2019**

**Pós-graduando:** Rafaela da Silva Rodrigues

**Orientador:** Luís Augusto Nero (Departamento de Medicina Veterinária)

**Spoilage of dairy products by *Pseudomonas* spp. - An overview**

Food spoilage is a serious global problem and it can be considered any change that renders a product unacceptable for human consumption. Microbial spoilage is the most common cause and leads to significant economic losses for the food industry. Microorganisms of the *Pseudomonas* genus are the psychrotrophics that have been more widely found in microbiota that alter foodstuff, especially milk and dairy products. The defects and alterations of products associated to their growth are caused by the release of enzymes (such as proteases and lipases), or other molecules like fluorescent or colored pigments. These microorganisms are heat-sensitive, however most secreted enzymes are heat stable. Therefore, many of these enzymes survive pasteurization and ultra-high temperature (UHT) treatments. Thus, heat-resistant enzymes may cause spoilage problems in UHT milk, sterilized milk and related UHT dairy products (e.g., cream and drinks based on milk). Also, milk powder can contain these thermotolerant enzymes and, as a consequence, products made with this contaminated milk powder (e.g., desserts, chocolate, confectionery, reconstituted milk) may show a similar spoilage mechanism. The activity of these enzymes can cause sensory defects and alter physicochemical properties, causing product instability. It can also be detrimental to cheese quality by causing bitter or rancid flavors, and by impairing milk's coagulation properties. In addition, the well-known ability of *Pseudomonas* spp. to form biofilm on dairy processing plant surfaces is related to post-processing contamination, such as in fresh cheese with colored pigmentation ranging from green to dark blue. Therefore, studies of the mechanisms of spoilage by *Pseudomonas* spp. are important to help find solutions to extend the shelf life of dairy products.


## References

CARMINATI, D.; BONVINI, B.; ROSSETTI, L.; ZAGO, M.; TIDONA, F.; GIRAFFA, G. Investigation on the presence of blue pigment-producing *Pseudomonas* strains along a production line of fresh mozzarella cheese. **Food Control**, v. 100, p. 321–328, 2019.


MACHADO, S. G.; BAGLINIÈRE, F.; MARCHAND, S.; COILLIE, E. V.; VANETTI, M. C. D.; BLOCK, J.; HEYNDRIKX, M. The biodiversity of the microbiota producing heat-resistant enzymes responsible for spoilage in processed bovine milk and dairy products. **Frontiers in Microbiology**, v. 8, article 302, 2017.

RAPOSO, A.; PÉREZ, E.; FARIA, C. T.; FERRÚS, M. A.; CARRASCOSA, C. Food spoilage by *Pseudomonas* spp.-An overview. In: **Foodborne Pathogens and Antibiotic Resistance**. 2017. p. 41–58.

TEH, K. H.; FLINT, S.; PALMER, J.; ANDREWES, P.; BREMER, P.; LINDSAY, D. Biofilm- An unrecognised source of spoilage enzymes in dairy products? **International Dairy Journal**, v. 34, p. 32–40, 2014.



ORIENTADOR



ORIENTADO