# Detection and characterization of *Listeria monocytogenes* in São Jorge cheesemaking milk, whey, curd and cheese via phenotypic and genotypic methods

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*Listeria monocytogenes* is a Gram positive opportunistic pathogen, often found in many natural and manmade environments. This pathogen causes food-borne infections, and may even lead to miscarriage in pregnant woman. There is therefore a great concern on the side of public health authorities on this issue – as a wide range of food products, including dairy products, have been associated in the near past with both outbreaks and sporadic cases. In addition, European rules have become stricter toward enforcement of safety measures encompassing all food products – and accordingly recommend application of GMP and HACCP.

São Jorge - an *Appélation d'Origine Protegée* cheese in Azores, represents ca. 51% of the overall AOP cheese production in Portugal. It is manufactured in small dairy farms, from raw cow's milk in the absence of any commercial starter.

**Aim**: This study was planed so as to estimate occurrence of *L. monocytogenes* throughout the São Jorge cheese production chain. The ultimate goal was designing specific strategies, targeted at reducing the microbial viable load of this pathogen in the finished cheese.

**Methods** : Three hundred and thirty five samples of raw milk, natural whey starter, curd and cheese along ripening – representative of the whole production chain

of seven independent dairies, were collected over one year, and assayed for *L. monocytogenes* and selected physicochemical parameters (pH, moisture and salt).

**Results**: While neither *L. monocytogenes*, nor other *Listeria* spp. for that matter were detected in whey starter, curd or cheese samples, two of the 104 (i.e. 1.9 %) samples of raw milk tested positive for *L. monocytogenes*. These two raw milk isolates represented the same ribotype – which has previously been reported to be the causative subtype of multiple human listeriosis outbreaks and cases elsewhere. On average, physicochemical parameters of cheeses after 4 mo of ripening presented values that likely minimize the risk of *L. monocytogenes* outgrowth during posterior storage and consumption.

**Conclusion and significance**: Our results indicate that raw milk used for São Jorge cheese manufacture, as well as the ripened product are rarely contaminated with *L. monocytogenes*. However, there is room for improvements of the current manufacturing protocols, so as to guarantee a safer final cheese.