

TITLE: Assessment of the behavior of *Listeria monocytogenes* during the preparation of gravad-salmon.

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ABSTRACT:

Listeria monocytogenes is a problematic bacterium for the fish processing industry. It is ubiquitous and causes listeriosis, a serious illness, especially for people belonging to higher risk groups such as the very young, old, pregnant, or immunocompromised. 'Gravad' salmon (i.e. cold-salted) is frequently consumed in haute cuisine. This dish is associated with *L. monocytogenes* and can be considered a high-risk product because they are usually prepared ready-to-eat. The objective of this study was to assess the behavior of *L. monocytogenes* during the preparation of gravad-salmon. A pool of *L. monocytogenes* was inoculated in fresh salmon slices to reach a final concentration of approximately 10^7 CFU/g. Then the contaminated salmon was completely covered by the mixture of glucose and NaCl, it was kept in the mixture for 72 hours and after it was washed abundantly with distilled water until complete removal of the seasoning, after this procedure it continued maintained at 4.5 °C for 7 days. Samples were collected at inoculation time 0, without the glucose and NaCl mixture, the following samples were collected 1 hour after the salmon was covered by the mixture and from that the points were collected every 24 hours. In the inoculated assays, initially there was a count of 6.91 ± 0.45 UFC / ml, slowly decreasing and reaching the time of 72 hours a count of 5.83 ± 0.42 UFC / ml. Immediately after salmon washing, the count declined to 5.24 ± 0.15 CFU / ml, however in the next sample time a slight increase was observed to 5.53 ± 0.19 CFU / ml in 24 hours after. And the salmon finished with a count of 5.13 ± 0.37 CFU / ml at 168 hours post-wash. Although listeriosis is an emerging disease with low incidence, it may have a high mortality rate, especially in immunocompromised individuals, pregnant or newborn women, in this study we conclude that gravlax salmon may present health risks if it is consumed by these individuals. Besides this, a heat treatment does not occur and that cure and storage conditions (4.5 °C) do not inactivate a significant number of microorganisms, since *L. monocytogenes* is a psychotrophic pathogen that have been shown to be resistant to the action of glucose and NaCl in these conditions.

Keywords: bacterial pathogen, fish, gravlax salmon, haute cuisine.

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