R307
Publication Only
Molecular biology, including diagnostics: Molecular virology

Monitoring of hepatitis A virus and norovirus in mussels from Puglia (south Italy)

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Objectives Hepatitis A virus (HAV) and Norovirus (NoV) in shellfish products are a public health problem as etiological agents of enteric disease. Consumption of mussels is one of the most common ways of acquiring HAV and NoV foodborn infections. The aim of this work is to evaluate the contamination of Norovirus and Hepatitis A virus in mussels in Puglia (South Italy), collected from principal areas of production, by a monitoring study in the period January 2011 – December 2013.

Methods 234 samples of mussels (141 *Mytilus galloprovincialis*, 28 *Tapes decussatus*, 17 *Venus gallina*, 8 *Ostrea edulis*, 8 *Modiolus barbatus*, and other species) were analysed using the molecular method of 'one-step real-time RT-PCR', according to the protocol of National Reference Laboratory for the control of viral contamination of mussels (ISS – Rome). The protocol provides different steps: withdrawal and homogenization of 2 g of hepatopancreas from samples, viral concentration and extraction, extraction of viral RNA, molecular analysis by a one-step real-time RT-PCR with separate amplifications for hepatitis A, Norovirus genogroup I (GI) and genogroup II (GII) using specific PCR probes and primers. A sample's extraction control (Mengovirus) and a PCR inhibition control (synthetic RNA) were applied in each determination and results were considered acceptable if process control was recovered from samples and no inhibition was detected in PCR.

Results Of the 234 mussels examined during the 3 years of monitoring, were detected 55 positive samples for Norovirus (23,50%), of which 30 positive samples for genogroup GI (12,82%), 14 positive samples for genogroup GII (5,98%) and 11 samples showed the presence of GI + GII (4,70%). Furthermore, 4 samples were positive for Hepatitis A virus (1,71%), of which 3 were positive also for Norovirus GI and 1 for Norovirus GI + GII.

Conclusion This work is a preliminary study about the contamination of mussels with etiological agents of enteric disease such as Hepatitis A virus and Norovirus. Regarding the presence of Norovirus, the reported data shows a higher rate of presence in mussels than other similar studies, with a greater presence of genogroup GI. On the contrary, the datum about the co-presence of both genogroups is in accord with the other studies. Instead for Hepatitis A virus, the few positive samples are related to the beginning of year 2011 and this result can be associated to a sporadic case. Other data are necessary to obtain a complete and more depth situation of contamination of mussels with enteric virus. Moreover, the epidemiological datum of caused enteric disease is underrated above for Norovirus. Epidemiological data and informations about the contamination of mussels with Hepatitis A virus and Norovirus are both necessary to highlight the risk associated to human health.
(Work supported by **IZSPB 06/11)**