P46

Exposure of Mytilus galloprovencialis to diarrhetic shellfish poisoning toxin: food safety implications

M. Silva[1], A. Campos[1], D. Pérez[1], C. Azevedo[1], P. Reis Costa[1], J. C. Martins[1], V. Vasconcelos[1], M. Freitas[1]

[1]Escola Superior de Saúde – Instituto Politécnico do Porto, Portugal

Throughout the world, toxins produced by algae are responsible for approximately 60000 human food poisonings yearly. Shellfish toxins cause damage to wildlife and have a negative economic impact on recreation, tourism and shellfish industry, being almost a worldwide phenomenon. Dinoflagelates such as *Dynophysis* and *Prorocentrum lima* are considered a primary producer of diarhetic shellfish toxins, such as Okadaic Acid (OA) and Dinophysistoxins (DTXs), which can be accumulated in the tissues of the bivalves. Bioaccumulation process could increase the concentration of OA and DTXs at risky level, making bivalves unsafe for human consumption. On the other hand, bivalves represent a rich source of allergen which can be altered or potentiated by the exposure of the aforementioned toxins. Seafood allergy is a hypersensitive disorder increasingly recurrent in recent years worldwide, where fish and shellfish are among the most common culprits due to, proteins like tropomyosin (TM). Herein, we evaluated the changes produced in the content of allergens in mussels followed by accumulation process of DSPs. In this sense, the main objective of this study was the quantification of the shellfish toxins and TM present in *Mytilus galloprovencialis* after feeding with OA and DTXs producer strain of *P. lima*. The quantification of OA and DTX-1 was performed on (equipment, protocol) using a homogenized from two grams of gills and digestive glands. ELISA Kit (some specification) was applied to measure invertebrate TM. Analytical results based on LC-MS allowed to verify that accumulation only occurred in the digestive gland with values of 2144.9 to 12433.5 µg/kg of OA and from 699.5 to 4546.6 µg/kg of DTX-1, not registering any value for the gills.

The quantification of TM showed a decreasing trend after 5 days of *P.lima* exposure content of TM, ranging the amount values between 280.3 ppb to 428.5 ppb. The results could mostly be explained by the decreasing level of nourishment in diet but also may be affected by toxin accumulation. Shellfish toxins, specifically, OA and DTX-1, could be acting as a strong inhibitor of serine/threonine protein phosphatase which interact with actin-binding proteins in the regulation of actin polymerization, may cause effects on cytoskeletal structure and inhibit the actin-activated ATPase activity, leading to the decrease in TM content. Research in this area should be carried out since it is a matter of public health concern and there is a lack of information regarding this issue.