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# MICROBIOLOGICAL AND HISTOPATHOLOGICAL CHARACTERISTICS OF THE EDIBLE MARINE GASTROPOD *TRITIA MUTABILIS* PLACED ON THE MARKET



Fishing of *Tritia mutabilis* is by far the most important activity carried out by artisanal fisheries using basket traps in the central and northern Adriatic Sea, yielding from 2000 to 3000 Tonnes of landings each year [1]. According to the European Legislation, marine gastropods placed “fresh” (unprocessed) on the market must comply with the same requirements laid down for live bivalve molluscs [2], namely the batch must be made with alive and viable animals, that respect microbiological and chemical criteria of food security [3,4]. Nevertheless, it must be recognized that the scientific knowledge about the microbiological quality of marine gastropods is poor, and substantially lacking for the edible marine species of the Italian seas. Moreover, a standardized method for the assessment of the viability of these animals placed on the market is not currently available, so the Official Controls on live gastropods harvested are often absent or inappropriate. Also, a batch of gastropods may be placed on the market by a Dispatch Center after re-packaging of a batch received from another Dispatch Center and so on, moving the product further and further away from the day and place of landing.

The aim of this project is to investigate the microbiological and histopathological characteristics of *Tritia mutabilis*, formerly *Nassarius mutabilis*, and to evaluate a simple method to evidence the viability of batches.

## SENSORY EVALUATION

### with COOKING SALT



### SHORT IMMERSION 30 MINUTES



### LONG IMMERSION 24-48 HOURS



Each batch was firstly analyzed for smell and viability. The 52% of the samples had a low viability (less than 40%), valued with cooking salt, and had an acrid or nasty smell. The remaining batches had salty or neutral smell and a viability more than 70%.

To confirm that the dead animals we saw with salt weren't apparent, half of each batch had a short immersion in marine water. Indeed, in all the samples, except one (in which the mortality was 100%), we saw an higher viability. For the same reason, we did a long immersion in marine water of a part of some batches and we see non only an higher viability than the valued with cooking salt ones, but also a better smell, e.g. starting from nasty to neutral in 48 hours. We also analyzed one sample with a mortality of 100% and a nasty smell, that, even after 24 hours in marine water, it remained the same, confirmed that we saw true dead animals with the salt.

We also did few shelf-life tests, storing at 5°C part of the batch and after a couple of days, the mortality, valued with salt, was 100%, even in batches starting with salty smell e 100% of viability.

Moreover, due to the re-packaging of some Dispatch Centers, we analyzed batches that, after 1 day of packaging, had nasty or acrid smell and high mortality.

## MICROBIOLOGICAL CHARACTERISTICS

All samples resulted negative for *E. coli*, *V. vulnificus*, *V. parahaemolyticus* and *V. cholerae*, but some were positive for *V. alginolyticus*. The *Vibrio* spp. load of each sample, expressed as Colony Forming Units (CFU) g<sup>-1</sup> have been log-transformed prior to calculate the mean value, that resulted 5,49 log<sub>10</sub> (SD=±0,66). Interestingly, it should be noted that the abundance of *Vibrio* spp. here reported is higher than the abundance registered on the bivalve *Ruditapes philippinarum* belonging to the same sea-area, shoving a mean value of *Vibrio* spp. less than 5 log<sub>10</sub> CFU g<sup>-1</sup> [5].

## VIROLOGICAL CHARACTERISTICS

Viral human pathogens, like Norovirus and HAV, were not detected. Instead, the betanodavirus was detected in 21% of samples. The finding of the fish pathogen betanodavirus pointed out a possible vector role of these invertebrates.

## HISTOPATHOLOGICAL CHARACTERISTICS

Microscopically, most of the animals were normal. Only few lesions were found in some specimens (granulocytomas). In one case a marked vacuolization of the mantle nerves was detected in association with the presence of betanodavirus.

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