

DEVELOPMENT OF QUALITY INDEX METHOD (QIM) FOR ADRIATIC SHRIMP (*Parapenaeus longirostris*)



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INTRODUCTION

The scientific aim of Quality Index Method (QIM) and its practical application is to determine the quality index of fish, which changes linearly with the time of storage in ice. The QIM is species-specific and very accurate in determining quality criteria.

MATERIALS & METHODS

The QIM was developed for Adriatic shrimp (*Parapenaeus longirostris*) stored in ice. In total 770 shrimps caught were used for the QIM scheme development in three steps:

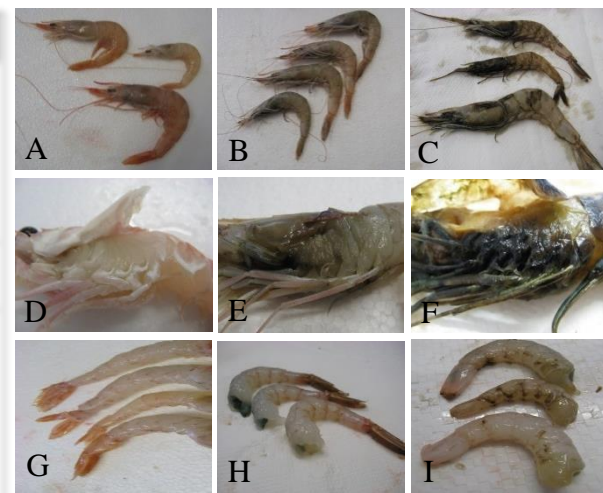
1. Daily description of parameters (changes in colour and odour, meat quality, gill appearance, and melanosis) of the shrimp over 14 days to develop a preliminary scheme,
2. Testing and modification of the preliminary scheme,
3. Development and assessment of the final QIM.

Grades 0, 1, 2 and 3 were used to characterize a specific change in sensory properties during the time in ice.

The evaluation was carried out on a homogeneous group of randomly selected samples (six or more) by six trained panellists.

RESULTS: Melanosis was not observed on day 0 but appeared on the head by day two and spread across the body. The fresh shrimp's light pink-orange color gradually faded in ice, and by day 6, it was almost gone, with green-gray areas dominating. Initially, the shrimp had a species-specific smell, but by day 7, it became earthy, and by day 9, some had urea and ammonia odor. Gills changed from yellow-gray to nearly black, with the smell worsening from sweet to rotten. The meat, initially firm and clear, softened, turned gray and green with rot and ammonia smell.

Quality Parameter	Description	Score
Colour	Pale orange to pink	0
	The orange (pink) color has significantly faded, green and gray spots appear	1
	Black with green-gray areas	2
Melanosis	None	0
	A little (segments, head)	1
	A lot (50-75%)	2
	Completely (100%)	3
Smell	Smell characteristic to the species	0
	Slightly sweet to earthy smell	1
	Smell of rot and moisture	2
Gills	Yellow-white to gray, mucus transparent and watery, neutral to slightly sweet smell	0
	Gray-green in color, mucus still watery, smell of wet cloth	1
	Dark gray to black, cloudy mucus, smell of rot	2
Meat	Transparent, white, firm and compact, slightly sweet smell, visible intestine along the entire length of the tail	0
	White, relatively firm, starts to become cloudy, slight sweet smell or smell of shellfish	1
	Cloudy, slightly soft, yellowish-gray color, smell of staleness	2
	Gray color with green deposits, relatively firm, smell of rot and ammonia	3
Quality Index (QI)		0-12



0 4 9
Sensory changes in shrimp colour/melanosis (A, B, C), gill appearance (D, E, F), and meat quality (G, H, I) during storage on the day 0, 4 and 9.

CONCLUSIONS

The maximum quality index score of the newly developed QIM was 12. The can be considered suitable for human consumption when stored at a temperature of 1 ± 2 °C for up to 8 days. By developing a QIM scheme, it is possible to estimate the remaining shelf life of shrimp, which can contribute to better management of catches and thus reduce waste.