Alliance
(https://www.aquaculturealliance.org)

Global Aquaculture Advocate ™

MARKETPLACE (/ADVOCATE/CATEGORY/MARKETPLACE)

QIM method scores quality, shelf life of pangasius fillets

Wednesday, 1 November 2006

By Huynh Nguyen Duy Bao, M.Sc.

Trained sensory panelists participated

Quality pangasius fillets have bright white or pinkish flesh with little gaping.

Freshness is a very significant component of the quality of seafood, a very perishable product. Sensory evaluation is an effective method to evaluate seafood freshness in a fast, easy, and reliable way.

The Quality Index Method (QIM) is a scoring system to assess freshness and estimate the quality of fishery products. The system originated in Tasmania, but most QIM programs have been developed and applied in Europe.

QIM is based on significant, well-defined product characteristics of appearance, odor, and texture, which change through storage. Normally, the demerit score for each quality parameter ranges 0-3, according to the parameter descriptions.

The scores for all the characteristics are added to produce an overall quality index, which increases as quality decreases. Since the index increases linearly with storage time on ice, the evaluation results can be used to estimate the shelf life of fish.

QIM procedures have been developed for several commercial fish, cephalopod, and crustacean species, both wild and farmed. The QIM can be applied to evaluate the freshness and quality of fish, and estimate the remaining shelf life of fish in the farmer-to-consumer chain. Production, processing and marketing can be more efficiently implemented if processors apply QIM to predict the shelf life of products. QIM evaluations also play an important role in traceability and purchasing, such as during electronic auctions.

QIM for pangasius fillets

In a recent study at the University of Fisheries in Vietnam, the authors developed a QIM system for fresh fillets of *Pangasius hypophthalmus*, an important freshwater catfish species farmed in the south of Vietnam.

The system, whose scoring is outlined in Table 1, was formulated through the observation of changes that occurred in the fillets from the day of filleting until they spoiled. Each parameter evaluated received scores, where a value of 0 corresponded to very fresh fillets. The scores increased according to spoil-age up to 2 or 3.

Bao, Quality Index Method scoring scheme for fresh Pangasius, Table 1

Quality Parameter	Quality Parameter	Description	Score
Skin	Color	Bright	0
Skin	Color	Somewhat dull	1
Skin	Color	Dull	2
Skin	Color	Dark	3
Skin	Mucus	Transparent	0
Skin	Mucus	Opaque	1
Skin	Mucus	Milky	2
Skin	Mucus	Yellowish	3
Flesh	Texture	Firm	0
Flesh	Texture	Somewhat soft	1

Flesh	Texture	Soft	2
Flesh	Texture	Very soft	3
Flesh	Blood	Bright red	0
Flesh	Blood	Dull red	1
Flesh	Blood	Brown	2
Flesh	Odor	Fresh, grassy	0
Flesh	Odor	Neutral, slightly fishy	1
Flesh	Odor	Fishy	2
Flesh	Odor	Sour, ammonia smell	3
Flesh	Color	White	0
Flesh	Color	Pinkish	1
Flesh	Color	Yellowish	2
Flesh	Color	Overall pink or yellow	3
Flesh	Brightness	Transparent	0
Flesh	Brightness	Opaque	1
Flesh	Brightness	Milky	2
Flesh	Gaping	No gaping	0
Flesh	Gaping	Gaping, less than 25% of fillet	1
Flesh	Gaping	Gaping, 25-75% of fillet	2
Flesh	Gaping	Gaping, over 75% of fillet	3
Total Quality Index			0-22

Table 1. Quality Index Method scoring scheme for fresh Pangasius fillets with skin.

Five trained sensory panelists participated in the evaluation of iced fillets. A quality index based on averaged data from the entire panel was calculated for each trial day of storage. The results showed a clear linear relationship between the index and storage time (Fig. 1).

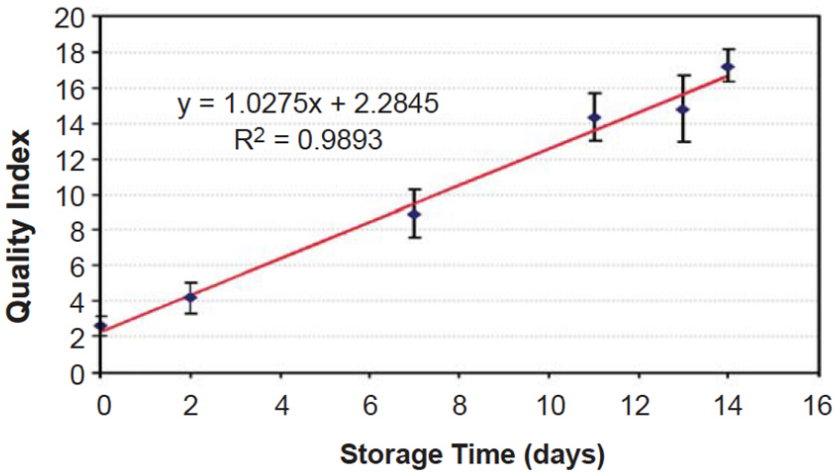

Fig. 1: Averaged quality index values with standard deviations for pangasius fillets stored on ice.

Shelf life estimation

Using this QIM, the shelf life of pangasius fillets can be estimated with an accuracy of approximately one day. This was confirmed by results from concurrent chemical and microbiological analyses.

As expected, microbial counts and ammonia levels increased with storage time (Figs. 2 and 3). At the beginning of the study, the microbes' total viable count (TVC) was about 10^3 colony-forming unit per g, and ammonia content was 4.5 mgN per 100 grams. These values increased to approximately 10^8 colony-forming unit per grams for microbes and 49 mgN per 100 grams for ammonia by the end of the storage test.

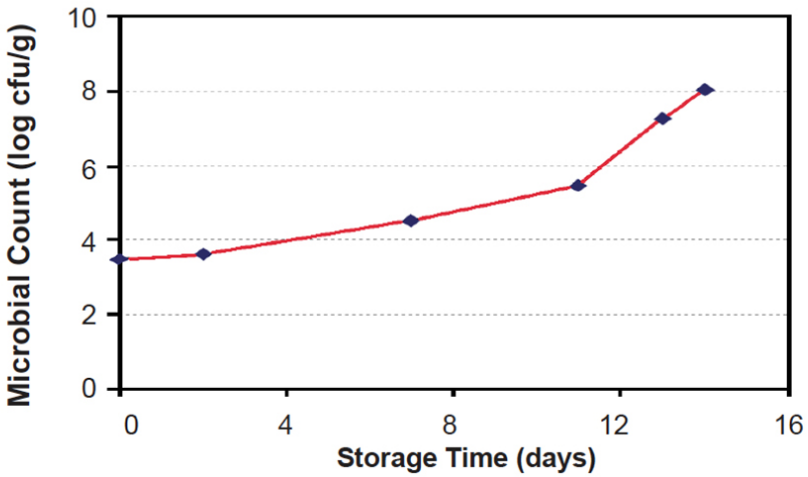

Fig. 2: Change in viable microbial counts in the flesh of pangasius fillets stored on ice.

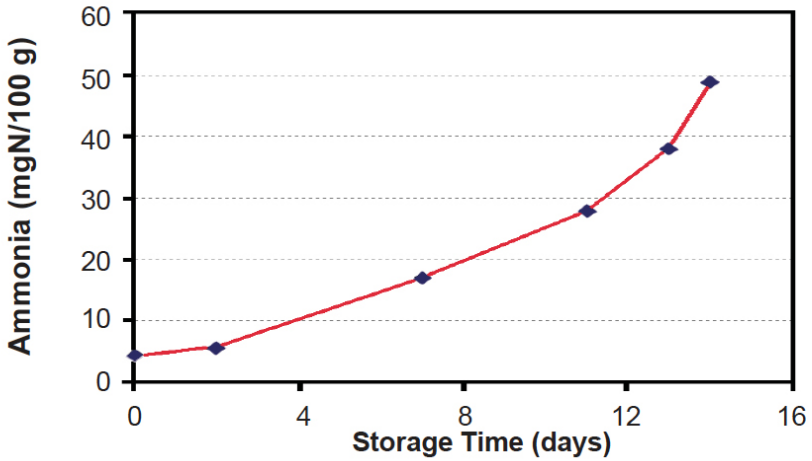

Fig. 3: Change in ammonia content in the flesh of pangasius fillets stored on ice.

After 12 days of storage, ammonia levels exceeded 30mgN per 100 grams. Using 10^7 colony-forming unit per g as a limit for spoilage, the shelf life of pangasius fillets stored on ice was determined to be 12 days.

(Editor's Note: This article was originally published in the November/December 2006 print edition of the Global Aquaculture Advocate*.)*

Author

HUYNH NGUYEN DUY BAO, M.SC.

Lecturer, University of Fisheries
Faculty of Aquatic Products Processing Technology
02 Nguyen Dinh Chieu
Nha Trang, Vietnam

hndbao@s.vnn.vn (mailto:hndbao@s.vnn.vn)