SEGMENT TWO SEAFOOD HACCP

During the fall of 2020, the LSU AgCenter and Louisiana Sea Grant in collaboration with Virginia Tech and Virginia Sea Grant hosted two Virtual Segment Two Seafood Hazard Analysis Critical Control Points (HACCP) workshops. The first workshop was offered in Spanish on October 30th, and the second was in English on November 12 & 13. Twelve seafood processors from multiple states, field agents and specialists from Texas Sea Grant attended the workshops. Based on an impact survey completed by participants, all attendees felt their knowledge and their confidence in completing duties associated with the presented material increased.

PRESENTATIONS


2. Watts, E. González, G., & Brandao, J. Webinar Tecnologías utilizadas en el procesamiento para alcanzar indicadores de seguridad alimentaria (Spanish for “Technologies used in processing to achieve food security”). Universidad Tecnológica de Panamá, American Society for Microbiology, LSU AgCenter, Louisiana Sea Grant, Centro de Producción e Investigaciones Agroindustriales (UTP). September 21, 2020. YouTube Video Online


**RESEARCH**

**ENHANCED CATFISH SKIN GELATIN COATING**

*Parraga, K., Songy, H., Eseose, H., R. Corsino II, and Watts E.*

In the United States, catfish is the principal aquatic species commercially grown. Catfish dressing can yield from 45-70% of product, creating 30-55% byproducts such as frames, heads, skin, viscera, and small amounts of blood and fins. Catfish skin accounts for up to 6% of the byproduct based on the live weight.

Catfish skin has been used to obtain gelatin. Gelatin is widely used in different industries (food, pharmaceutical, and cosmetics). In the food industry, it is used as a coating or carrier for additives. Gelatin has been extracted principally from pork and beef sources; however, people from kosher and halal religions cannot consume this type of gelatin. This has created the necessity for a different source of gelatin.

Three types of gelatin can be obtained based on the extraction method. Acid (a.k.a. as type A gelatin), alkaline (a.k.a. type B gelatin), and enzymatic. Gelatin is converted to a soluble polypeptide from collagen. The purpose of the alkaline and acid treatment is to remove non-collagenous proteins and extract proteins, respectively. Several studies have demonstrated that fish gelatin peptides and proteins can vary based on the species. The peptides and proteins can improve food shelf life or work as antioxidants. The purpose of this study was to utilize gelatin extracted from catfish skin to enhance the quality of fresh catfish fillets.

![Catfish skin rinse during gelatin extraction](#)
Gelatin was extracted from catfish skin using an alkaline treatment follow by an acid treatment (Figure 1). Extracted gelatin was characterized, and then enhanced with antimicrobials to improve the shelf life of fresh catfish fillets. Fresh catfish fillets were purchased at a local market and separated in four groups. Fish was treated with DI water (C), catfish skin gelatin alone (G) and in combination with potassium sorbate (PS), and lactic acid (LA). Samples were randomly assigned to the treatments, immersed for 60 seconds in the solutions, let dry for 10 minutes (Figure 2), placed in plastic bags, and stored in ice in a refrigerated unit. Samples were tested every 3 days for 30 days. Physical, chemical, and microbial activities were analyzed during the study.

The initial Aerobic Plate Count (APC) of the samples treated with gelatin in combination with LA was significantly lower than the control. Initial APC for the control group was 4.50±0.21 Log CFU/g, compared to LA with 3.55±0.03 Log CFU/g. Through the shelf-life PS presented a significant lower APC compared to other treatments. At day 30, APC was 7.17±0.10, 5.77±0.28, and 4.40±0.34 Log CFU/g for control, LA, and PS, respectively. The pH for all treatments started below 7 with no significant differences observed during the first 24 days for the control and gelatin groups. However, PS and LA, pH decreased after day 3. At the end of the study, TBARS was significantly higher for LA group (1.54±0.17 MDA equivalent/kg) compared to other groups. In conclusion, gelatin extracted from catfish skin in combination with other antimicrobials increased the shelf life 3 days for fresh catfish fillets compared to the control group (Figure 3).

Figure 3. Catfish fillets treated with DI water (C), gelatin alone (G) and in combination with potassium sorbate (PS) and lactic acid (LA) 30 days post-treatment (Photos by Parraga, K. & Songy, H.).

**POSTER PRESENTED AT PROFESSIONAL CONFERENCE**


PEER REVIEWED PUBLICATIONS


TEACHING

In Fall 2020, participated as guest lecturer in the Food Safety class (NFS 3000), presenting a one-hour lecture on “Seafood Toxins.”

UPCOMING EVENTS

- **Segment Two Virtual Seafood HACCP**
  - English *January 29, 2021*
  - Spanish *March 26, 2021*

- **Oyster Remote Setting Virtual meeting**
  - *April 29, 2021*

- **Louisiana Fisheries Forward**
  - *February 2022*
LOUISIANA SEA GRANT REQUEST FOR PROPOSALS

Request for Proposals 2022-2023 Competitive Research Program
LOUISIANA SEA GRANT COLLEGE PROGRAM
Two – Year Funding Period: February 1, 2022-January 31, 2024
view the full Request for Proposals FY 2022-2023 Competitive Research Program

Statement of Interest & Full Proposal Schedule:

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<tr>
<td>Early January, 2021</td>
<td>Request for Statements of Interest issued</td>
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<tr>
<td>January 13, 2021</td>
<td>RFP Question and Answer Webinar</td>
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<td>March 8, 2021</td>
<td>Statements of Interest due</td>
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<td>Mid-April 2021</td>
<td>Statements of Interest reviewed; PIs notified</td>
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<tr>
<td>June 4, 2021</td>
<td>Full proposals due</td>
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<td>Late-August 2021</td>
<td>Final proposal selection; PIs notified</td>
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<td>Late-October 2021</td>
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<td>January 31, 2024</td>
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For more information about RFP visit Louisiana Sea Grant Website

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