

**CONSUMER ACCEPTABILITY OF POST HARVEST
PROCESSED AND VALUE ADDED OYSTERS**

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Traditional raw oyster consumption, with its mystic of romanticism and burliness, assumes the oyster must be eaten alive and still “kicking”. Most oyster lovers assume that eating dead processed oysters must not be safe or tasty. These ideas are similar to consumer resistance to accepting pasteurized milk. Pasteurized milk has its own distinctive flavor, different from raw milk, but still highly acceptable and safer particularly for children and pregnant women. In order to overcome consumers preconceived ideas regarding the tastiness of post harvest processed oysters, they must be educated about the improved safety of PHP oysters and introduced to the products themselves for their own sensory evaluation and degree of acceptability.

Objectives:

1. Determine consumer acceptability of three PHP products.
2. Statistically determine if consumer panelist demographics influenced the acceptability of the PHP products.
3. Determine if consumers would purchase more oysters based on their perception of safety.
4. Determine consumer acceptability of oyster value-added products, and willingness to purchase these products and at what price.

Methods:

Obj. 1: Mississippi oysters were harvested on December 2, 2002 and January 3, 2003. On the day of harvest, the oysters were transported by refrigerated truck to Houma, Louisiana. The next day the oysters were split into three lots, with each lot receiving one of three post harvest processes (Individually quick frozen(IQF), pasteurized (PST),or high hydrostatic pressure (HPP). That day, the oysters were transported back to Pascagoula, MS and placed under appropriate storage, either frozen or refrigeration. Samples were then analyzed for microbial safety to deem appropriate for presentation to consumer panel volunteers. Within five days of processing, consumer panels were conducted in Long Beach, MS; Gulfport, MS; Biloxi, MS; and Jackson, MS.

OYSTER ACCEPTABILITY SURVEY

Please rate each oyster according to the level of acceptability: Number _____

Color
Bad poor fair good excellent
0 _____ 5 _____ 10

Texture
Bad poor fair good excellent
0 _____ 5 _____ 10

Flavor
Bad poor fair good excellent
0 _____ 5 _____ 10

Juiciness
Bad poor fair good excellent
0 _____ 5 _____ 10

Odor
Bad poor fair good excellent
0 _____ 5 _____ 10

Saltiness
Bad **poor** **fair** **good** **excellent**
 0 _____ 5 _____ 10

Overall acceptability
Bad **poor** **fair** **good** **excellent**
 0 _____ 5 _____ 10

Obj. 2: Numerical scores and demographic information were tabulated and analyzed by ANOVA by the Experimental Statistics Department, MAFES on MSU main campus.

Obj. 3: As part of the questionnaire, consumers were asked if they would consume more oysters if they thought the oysters were free of bacterial pathogens. Responses were tallied and statistically analyzed.

Obj.4: Two value-added products were developed at the Experimental Seafood Processing Laboratory. Oysters were fast smoked and packaged in their natural juice and frozen. Smoked oysters were combined with fat free cream cheese and spices and prepared as a smoked oyster spread. See details below. These products were evaluated by consumers at a festival in Biloxi, MS., April 11-13, 2003. Consumers were asked to score acceptability of the products, whether they would purchase the products if available at local markets and how much they would be willing to pay for the products.

OYSTER PRODUCT ACCEPTABILITY SURVEY

Please rate **THIS OYSTER PRODUCT: SMOKED OYSTER**, according to the level of acceptability:

Make a mark on the line for your response.
Do not like **like a little** **like a lot** **like extremely**
 0 _____ 5 _____ 10

Would you be willing to purchase this product, especially if produced by a local processor?

Yes _____ No _____ Don't know, not sure _____

If yes, how much would you be will to pay for a can of smoked oysters like the one demonstrated?

\$.50 to \$1.00 _____ \$1.01 to \$1.50 _____ \$1.51 to \$2.00 _____

OYSTER PRODUCT ACCEPTABILITY SURVEY

Please rate **THIS OYSTER PRODUCT: SMOKED OYSTER CHEESE SPREAD (VERY LOW FAT)**, according to the level of acceptability:

Make a mark on the line for your response.

Do not like **like a little** **like a lot** **like extremely**
 0 _____ 5 _____ 10

Would you be willing to purchase this product, especially if produced by a local processor?

Yes _____ No _____ Don't know, not sure _____

If yes, how much would you be will to pay for An 8 oz package of "low fat smoked oyster cheese spread?"

\$ 1.50 to \$2.00 _____ \$2.01 to \$2.50 _____ \$2.51 to \$3.00 _____

Results:

Obj. 1: The consumer panel evaluating PHP acceptability was comprised of 254 people:

- ?? Male 182; Female 72
- ?? 96 % White
- ?? Income level split about equal from \$20 to >\$80 K/year
- ?? Panelist's ages were between 18 and over 60, fairly evenly split.
- ?? Most had attended some college, 40% had BA or BS.
- ?? 76 % were from the South Eastern US.
- ?? Consumption by location: 71 % consumed oysters less than

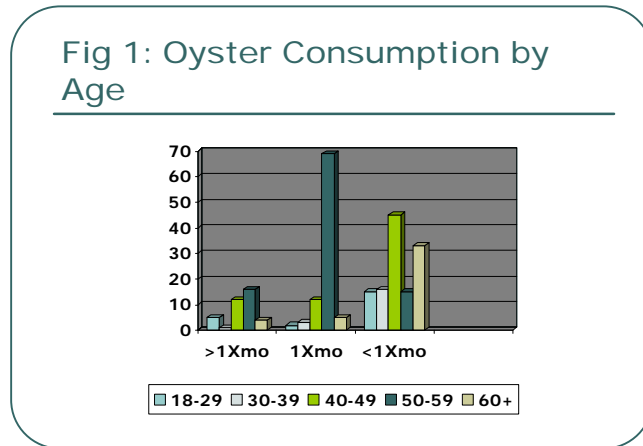
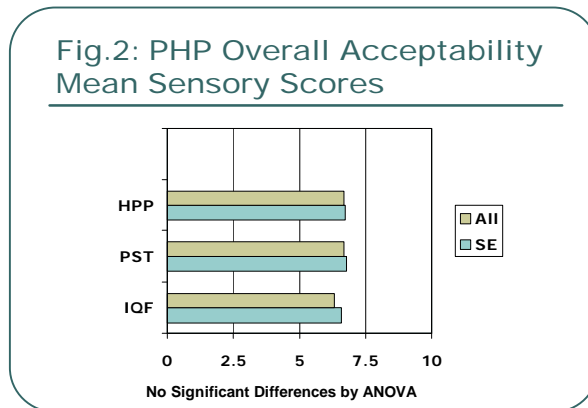


Figure 1 shows oyster consumption by age. Nearly 15% of those surveyed consume oysters more than once a month; 36% once a month; and 49% less than once a month.



The overall acceptability mean scores were not shown to be significantly different, Figure 2. However, the IQF was found to score slightly lower than the HPP and PST. All three were in the acceptable to highly acceptable range. No significant differences were found based on age, income, education, or gender. The majority of the panel were caucasian from the Southeastern United States, therefore no conclusions could be drawn regarding the acceptability based on race or origin.

Fig 3: Consumer Descriptive Mean Score for Entire Panel

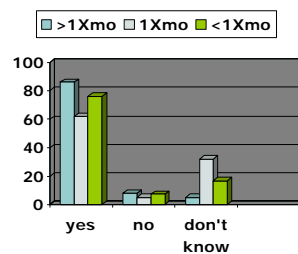
Descriptor	IQF	PST	HPP
Color	6.78	7.00	6.95
Flavor	6.44	6.06	6.46
Texture	6.59	6.74	6.95
Odor	6.94	6.80	7.03
Juiciness	6.93	7.37	7.52
Saltiness	5.12	5.36	5.26

ANOVA – No statistical differences

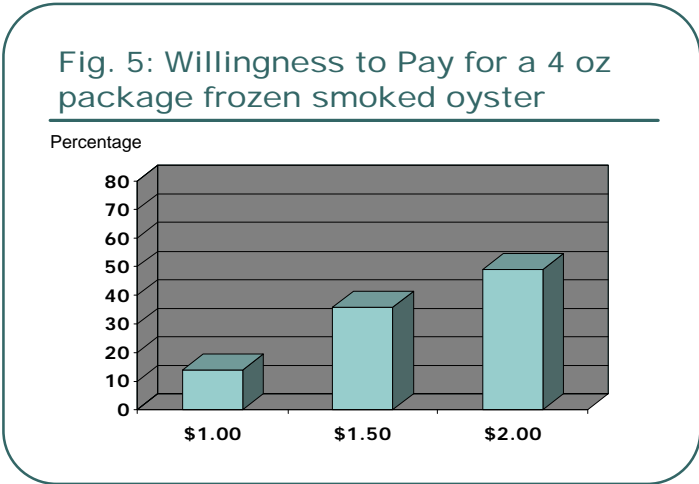
In general, acceptability of the various sensory qualities measured were similar for each of the 3 PHP's. Each of the PHP's had one or two areas that they scored higher than the other, but not of statistical significance, Figure 3.

Obj. 2: Panelists were asked if they would consume more raw oysters if free of bacterial pathogens. Of those 75.3 % said yes. This included persons at all three consumption levels, Figure 4.

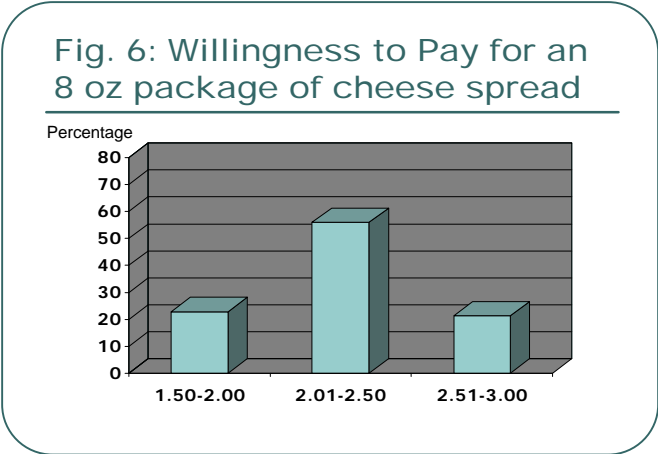
Fig. 4: Breakdown of whom would consume more



Obj. 3. Consumer acceptance of value-added oyster products was surveyed at the Biloxi Crawfish Festival. There were 106 volunteers who evaluated the smoked oysters and 141 volunteers who evaluated the smoked oyster cheese spread. On a scale of 0-10, the smoked oysters received a mean acceptability of 7.98, with 75% saying they would purchase the product if available on the market. The product would be marketed as a frozen smoked oyster appetizer, low fat since not packed in oil, as is the usual packaging for canned smoked oysters. The willingness to pay by the yes respondents is presented in Figure 5.



The mean acceptability score for the smoked oyster cheese spread was 7.11 out of a possible 10. 77% said they would purchase the product. This product would be marketed as a fresh packaged “deli” product, low fat is made with reduced fat cream cheese. The willingness to pay by the 77% who were willing to purchase the product is presented in Figure 6.



Conclusions: Many oyster lovers have shied away from eating raw oysters due to the perceived risk of danger from bacterial pathogens. This study has shown that oyster sales can be increased through building consumer confidence by making available post harvest processed oysters and value added oyster products. Educating the consumer and through proper marketing the oyster industry throughout the Gulf states will benefit.

Acknowledgements: The project coordinator would like to thank all industry partners, who through their efforts, made this project successful. I would also like to thank the Department of Marine Resources for their valuable time spent assisting with the panels and providing space for us to conduct the panels in Biloxi, Jackson, and at the Crawfish Festival. Other MSU participants included Susan DeBlanc, Tommy Schultz, and Patrick Broussard.