

*Gender Participation of Dried Boneless Siganids, *Siganus puellus**

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Rationale

Taboan Market in Cebu City, Philippines is the most famous source of dried siganids or boneless *danggit*, which served as gift presence for local and foreign tourists.

The aerobic plate counts on fish and fishery products generally do not relate to food safety hazards, but sometimes can be useful in indicating quality, shelf life and post heat-processing contamination (<http://seafood.ucdavis.edu/haccp/compendium/chapt09.htm>).

Siganid vendors involved in the distribution channels are important.

CTU researchers utilized coconut water as pre-treatment to marinated mullet using low temperature preservation to enhance the overall quality (Macachor, 2015).

Hence, this study determined the gender participation of vendors in the selected boneless *danggit* displayed at Taboan Market in Cebu City, Philippines.

Objectives

This study aimed to determine the safety of dried *danggit* based on microbial analyses and its gender participation of vendors in the distribution channels.

Framework

- The moisture content of fish needs to be reduced to 25% or less in order to prevent spoilage. The percentage will depend on the oiliness of the fish and whether it has been salted (<http://www.fao.org/WAIRdocs/x5434e/x5434e0f.htm>).
- A water activity of 0.85 or below will prevent the growth and toxin production of all pathogenic bacteria, including *Staphylococcus aureus*, and is critical for the safety of a shelf-stable dried product. (<http://seafood.ucdavis.edu/haccp/compendium/chapt09.htm>).
- Macachor *et al*, 2015 (UM 2-2014-000712) discloses the method of producing mullet *Mugil cephalus* chunks soaked in 50% coconut water enhances the sensory qualities of chunks mullet.

Materials and Methods

- ❑ Experimental method of research
 - ❑ *Phase 1: Characterization of Commercial Samples*
 - ❑ Physico-chemical properties (A_w and pH)
 - ❑ Microbial analyses
 - ❑ Aerobic Plate Count
 - ❑ Staphylococcus aureus
 - ❑ Mold Count
 - ❑ *Phase 2: Coconut Water Treated Dried Danggit Samples*
 - ❑ Aerobic Plate Count
- ❑ Descriptive method of research
 - ❑ Survey questionnaire

Materials and Methods



Deboning



Brining



Loading for drying



Dried Boneless Danggit



Boneless Danggit

Fig. 2: Coconut Water Treated Boneless *Danggit* as Phase 2

Results and Discussion: Phase 1 - Characterization of Commercial Samples

The study characterized the physico-chemical properties of the commercialized dried seafoods that were identified by the vendors which are top 3 best sellers such as boneless *danggit*, dried squid and dried sardines or *mangsi*. The water activity were calculated based on the salt, fat and moisture content of the samples. Fig. 3 revealed that the salt content of the dried *danggit* contained 1.144% which is the highest among the three (3) samples.

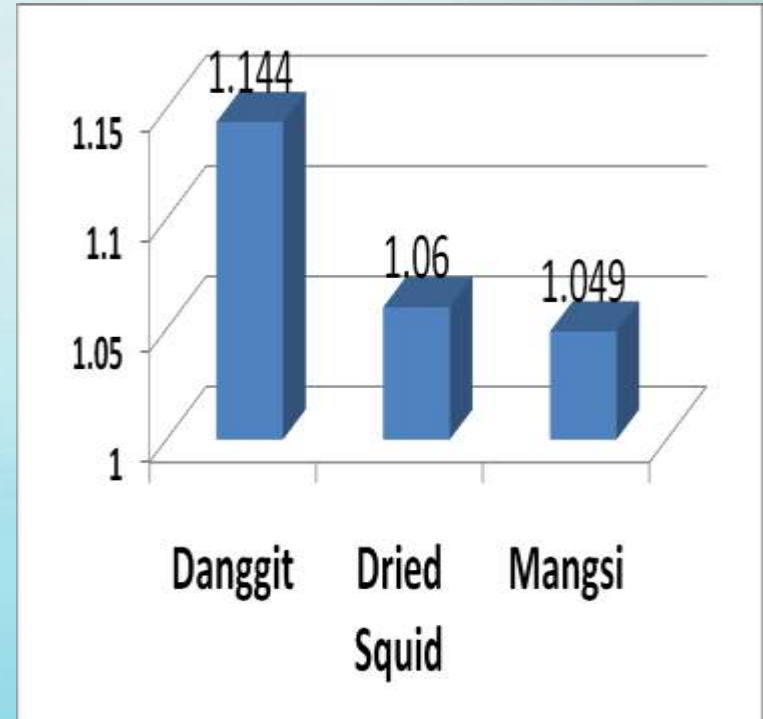


Fig.3

Percent Salt Content of the Dried Seafoods

Results and Discussion

Phase 1 - Characterization of Commercial Samples

Fig. 4 showed that the percent fat content of the dried danggit, dried squid and dried sardines had 2.11%, 1.5% and 4.99%, respectively. This data insignificantly differs from the work published in <https://www.fatsecret.com/calories-nutrition/generic/fish-dried> with 1.34% to 5% as stated in <http://www.myfitnesspal.com/nutrition-facts-calories/dried-fish-fat>.

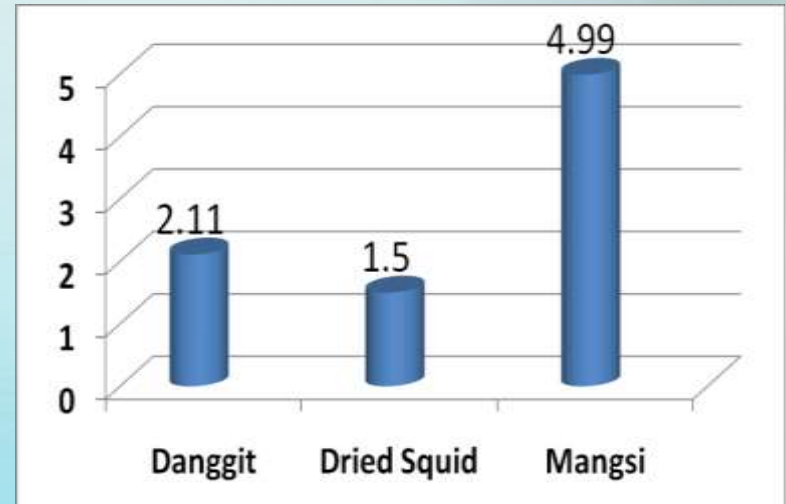


Fig. 4

Percent Fat Content of the Dried Seafoods

Results and Discussion

Phase 1 - Characterization of Commercial Samples

Fig. 5 showed that the percent moisture content of the dried danggit, dried squid and dried sardines had 17.51, 20.68% and 41.68% respectively.

- The percent moisture content of dried sardines had the highest value since the product is in whole cut; while the dried siganids or danggit were in fillet form as well as dried squid. Hence the drying rate of the latter samples were faster than in the dried sardines.

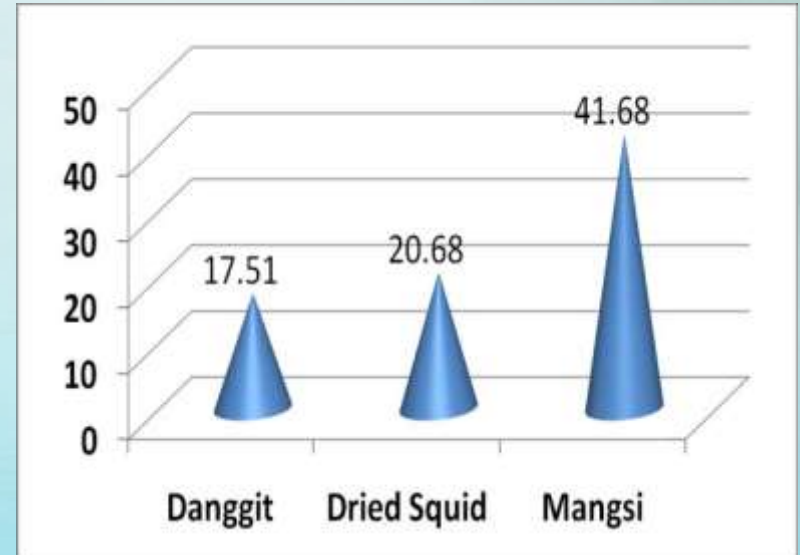


Fig.5

Percent Moisture Content of the Dried Seafoods

Results and Discussion

Phase 1 - Characterization of Commercial Samples

Fig. 6 showed that the water activity of the dried danggit, dried squid and dried sardines which had 0.84, 0.9 and 0.99%, respectively.

- Hence, dried siganids is safe for human consumption considering the fact that a water activity of 0.85 or below will prevent the growth and toxin production of all pathogenic bacteria, including *Staphylococcus aureus*, and is critical for the safety of a shelf-stable dried product. (<http://seafood.ucdavis.edu/haccp/compendium/chapt09.htm>).

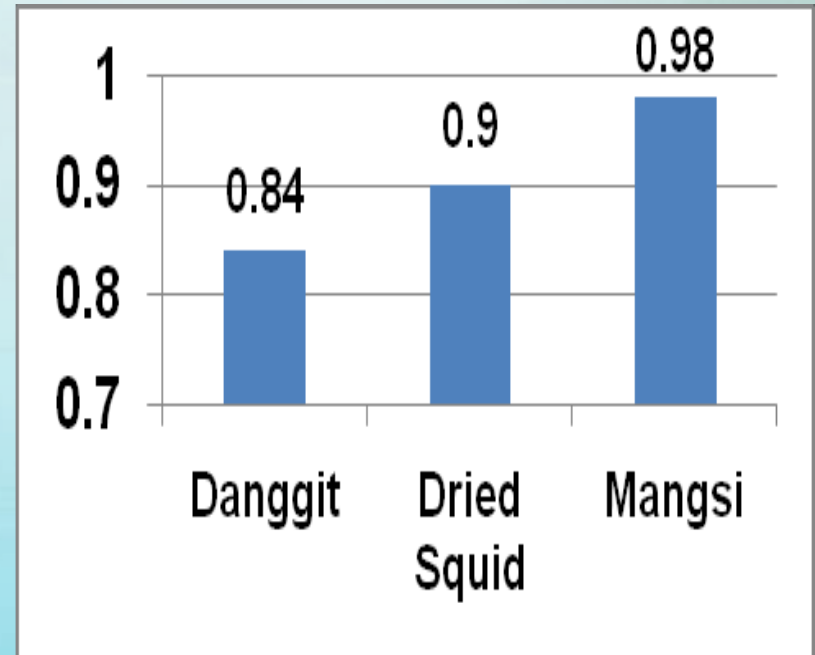


Fig.6
The Water Activity of the Dried
Seafoods using Calculation
method

Results and Discussion

Phase 1 - Characterization of Commercial Samples

The pH of the dried siganids, dried squid and dried sardines were 6.3, 6.5 and 6.1 which belongs the low acid food products that conforms to the fact that the pH of the dried fish ranged from 6.2 to 6.6. (http://shodhganga.inflibnet.ac.in/bitstream/10603/50877/15/15_chapter%207.pdf)

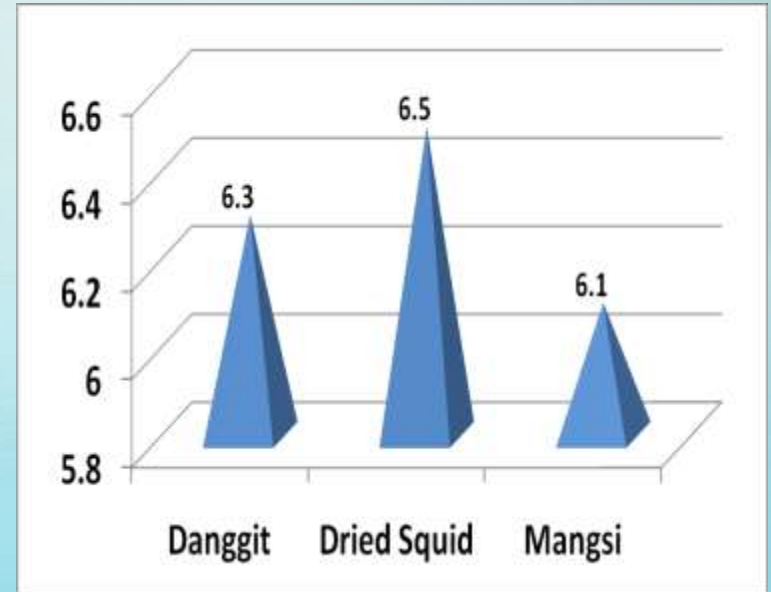


Fig. 7

The pH of the Dried Seafoods

Results and Discussion

Phase 1 - Characterization of Commercial Samples

The aerobic plate count of dried siganids, squid and sardines were 1×10^4 cfu/gram, 2.5×10^4 cfu/gram and 5×10^4 cfu/gram as reflected in Figure 8.

Fish of good quality should have bacterial **count** less than 10^5 per. Gram (Pal *et al.*, 2016) with *Staphylococcus aureus* 30, 50 and 100 cfu/gram sample for dried siganids, squid and sardines, respectively.

The mold count in cfu/gram of dried siganids, squid and sardines ranged 23, 20 and 15 cfu/gram sample, respectively.

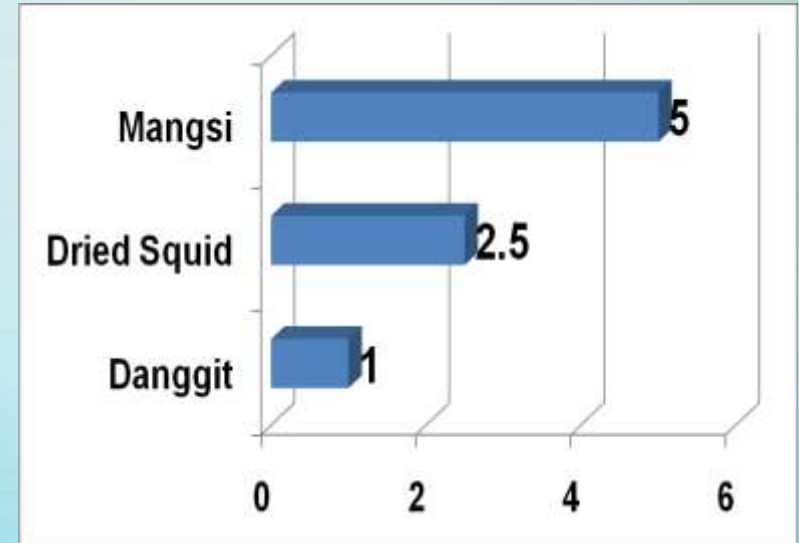


Fig.8

Aerobic plate count of Bacteria from selected dried products in 10^4 cfu/g sample.

Results and Discussion

Phase 2 - Microbial Analyses of Coconut Water Treated Boneless Siganids Samples

Table 1. The Microbial Analyses of the Coconut Water Treated Boneless Siganids in cfu/g

Parameter	100%	50%	0%	Com'l sample
Bacteria	6.7×10^3	3.3×10^3	6.6×10^3	2.5×10^5
Mold	2.0×10	$<1.0 \times 10$	$<1.0 \times 10$	2.8×10^2

The aerobic plate of bacteria of dried siganids with 50% coconut water had the most lowest bacterial count compared to the rest of the experimental and commercial samples. Hence, the best pre-treatment Of coconut water was using 50% coconut water prior to drying process.

Results and Discussion

Table 2. Gender participation on distribution channels

Distribution channels	Masculine (N=100)	Feminine (N=100)
Public Market	30%	70%
Street vending	25%	75%
Souvenir shops	22%	78%
E-market	20%	80%

Conclusion and Recommendation

The coconut water pre-treatment prior to drying process enhances the quality of the dried siganids, hence 50% coconut water added to 50% chilled brine solution is recommended.

Mostly involved in the distribution channels of boneless siganids are feminine.

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**Thank you very
much**