

Correlation of Vendor Food Handling Practices in a Public Market on Microbiological Quality of Ready-To-Eat Filipino Steamed Rice Cakes

Elaine Rizza P. Javinal and Gerieka R. Anapi

Laboratory of Food Microbiology and Hygiene, College of Home Economics, University of the Philippines-Diliman
epjavinal@up.edu.ph | granapi1@up.edu.ph

I. INTRODUCTION

Traditional Filipino rice cakes are a significant part of Filipino food culture and are consumed by the majority every day, thus, they must be of good quality and safe to consume. Food poisoning cases caused by rice cakes are present in the Philippines due to mishandling of food and improper food storage. This emphasizes the need to conduct studies regarding the food handling practices of the vendors and how it relates to the microbial presence in these products as the low sanitation and various practices of handlers can indicate the presence of microorganisms in the product. This study aimed to assess the correlation between the food handling practices of vendors from a public market and the microbiological quality of ready-to-eat (RTE) Filipino steamed rice cakes.

Specifically, this study aimed to:

- determine the food handling practices of the vendors of RTE Filipino steamed rice cakes
- perform microbiological analysis of the RTE Filipino steamed rice cakes
- correlate the food handling practices and microbiological quality of RTE Filipino steamed rice cakes

III. RESULTS

Table 1. Average scores of the vendors regarding their food handling practices

Practices	Average Scores (%)	
	Correct	Wrong
Personal Hygiene	11	4
Food storage and handling	14	1
Prevention of Contamination	9	6

Table 2. Average scores of the observation of the workplace and personal hygiene of the vendors

Observation	Average Scores (%)	
	Correct	Wrong
Environment around stall	9	6
Personal hygiene	8	7
Wearing of basic PPE	1	14

Table 3. Physicochemical properties and microbiological quality of puto samples obtained from some vendors in the market

Parameters ^a	Source				
	A	B	C	D	E
Physicochemical ^b					
pH	5.32 ± 0.36 ^b	5.05 ± 0.19 ^{bc}	5.91 ± 0.14 ^a	4.82 ± 0.20 ^c	5.33 ± 0.13 ^b
A _w	0.94 ± 0.00 ^b	0.96 ± 0.00 ^a	0.97 ± 0.01 ^a	0.95 ± 0.00 ^b	0.96 ± 0.00 ^a
Microbiological					
APC (log CFU/g)	8.37 ± 0.14 ^a	8.76 ± 2.37 ^a	12.20 ± 0.20 ^a	9.62 ± 0.09 ^a	12.7 ± 1.61 ^a
YMC (log CFU/g)	9.68 ± 0.40 ^a	10.60 ± 1.36 ^a	10.03 ± 0.08 ^a	9.70 ± 0.06 ^a	9.47 ± 0.35 ^a
<i>E. coli</i> count ^c (MPN/g)	<1.8 ± 0.00 ^a	<1.8 ± 0.00 ^a	3.15 ± 1.56 ^a	<1.8 ± 0.00 ^a	<1.8 ± 0.00 ^a

^a Obtained from two (2) independent runs with two (2) internal replicates, reported as Mean ± Standard Deviation

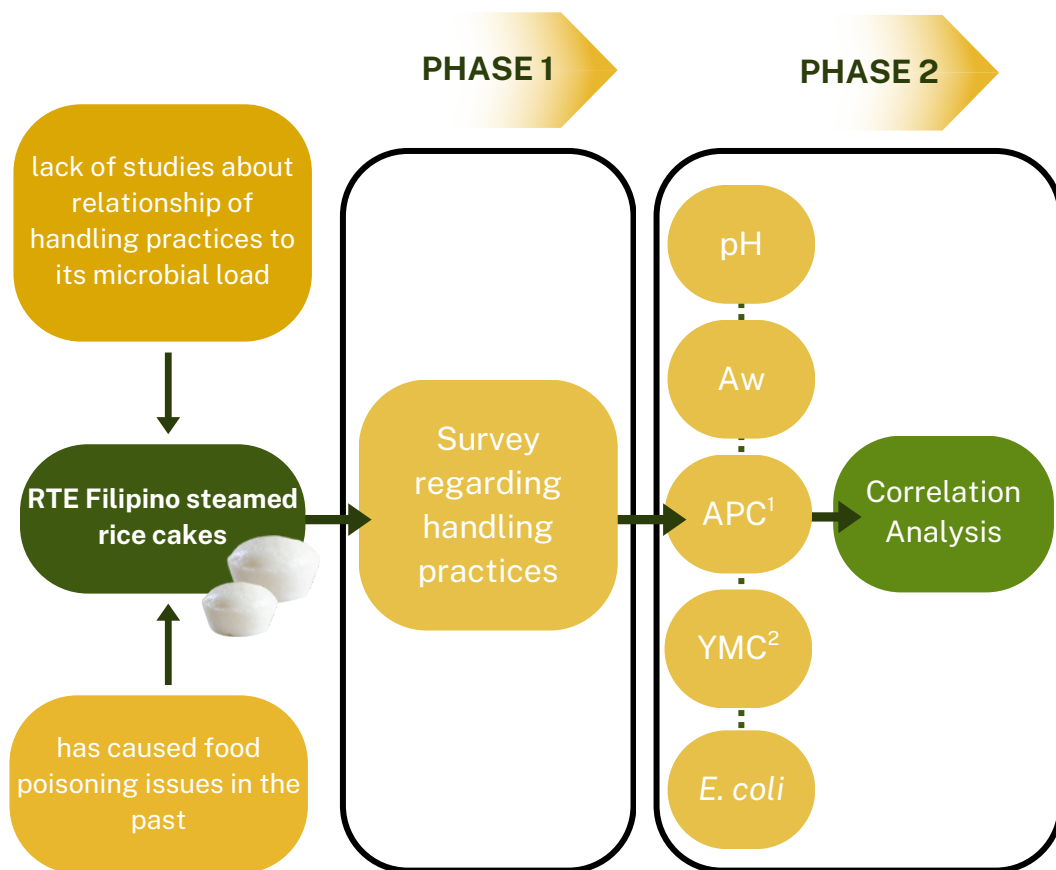
^b Values from the same row followed by a different letter are significant at $p < 0.05$

^c A result of <1.8 indicates a negative result for *E. coli*

V. ACKNOWLEDGEMENTS

We would like to acknowledge and express our gratitude to the public market that allowed us to conduct our study in, as well as the DOST-SEI for providing financial aid which supported the completion of this study.

II. METHODOLOGY



¹Aerobic Plate Count ; ²Yeast and Mold Count

Figure 1. Conceptual framework for the determination of the correlation of vendor food handling and the microbiological quality of RTE Filipino steamed rice cakes

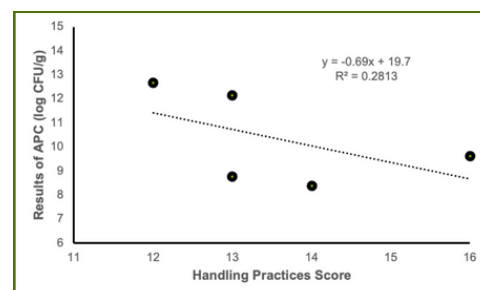


Figure 2. Correlation of food handling practices score and APC of the RTE Filipino steamed rice cake samples

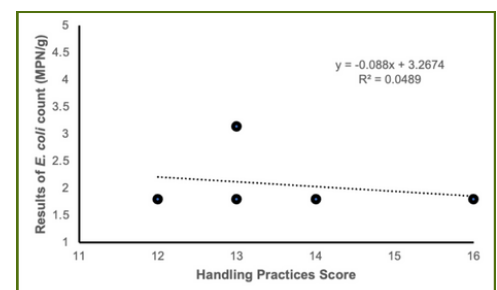


Figure 3. Correlation of food handling practices score and APC of the RTE Filipino steamed rice cake samples

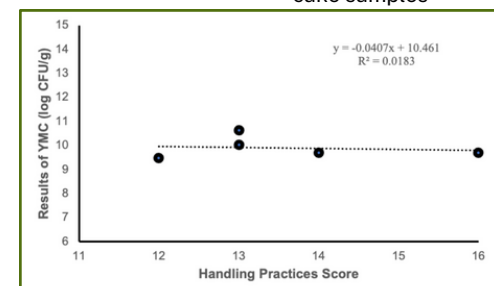


Figure 4. Correlation of food handling practices score and APC of the RTE Filipino steamed rice cake samples

IV. CONCLUSION

The correlation between the handling and the microbiological quality of the samples were determined, obtaining values of -0.62 (APC) and -0.18 (*E. coli* count), indicating a substantial and low negative correlation, respectively, and 0.15 (YMC), indicating a low positive correlation. From the findings, it is concluded that improvements and streamlining of standard protocols of the vendors should be prioritized to ensure that the food provided to the consumers are of high quality.