Risk Assessment Studies
Report No. 32

Microbiological Hazard Evaluation

MICROBIOLOGICAL QUALITY OF POACHED CHICKEN FOR SALE IN RETAIL OUTLETS

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EXECUTIVE SUMMARY

This study aims to determine the microbiological quality of poached chicken[†] for sale and sauce (味水) for soaking and/or dressing poached chicken in retail outlets. This study also intends to identify the critical control points (CCP) in poached chicken production process and to make appropriate recommendations to the food trade and consumers to ensure food safety.

Study on the microbiological quality of poached chicken

During July and September 2007, the Centre for Food Safety (CFS) obtained a total of 247 poached chickens and 70 sauces from different retail outlets. Laboratory analysis for four microbiological parameters, namely aerobic colony count (ACC), *Salmonella* spp., *Vibrio parahaemolyticus* and *Staphylococcus aureus*, were conducted by the Public Health Laboratory Services Branch of the Centre for Health Protection, Department of Health.

Results

Results showed that out of the 247 poached chickens sampled, the microbiological quality of 192 (77.7%), 31 (12.6%) and 22 (8.9%) samples were classified into Class A, Class B and Class C respectively in

[†] For the purpose of this study, poached chicken referred to steamed plain chicken (白切雞), steamed chicken with salted sauce (香妃雞), Hainan chicken (海南雞), Shajiang chicken (沙薑雞) and that is produced by poaching the raw chicken in hot water until it is cooked.

accordance with the classification of the microbiological quality stipulated in the Microbiological Guidelines for Ready-to-eat Food*. Two samples were found to contain more than 10^4 cfu/g *Staphylococcus aureus* and were classified into Class D. In this study, aerobic colony count was the microbiological parameter most often associated with Class C samples, 16/247 (6.5%) of the sampled chickens were classified into Class C under aerobic colony count assessment. The results indicated that prolonged storage at room temperature was an area of concern in the poached chicken production process. The microbiological quality of all sauce samples in this study was classified into Class A.

Conclusion and recommendations

The microbiological quality of majority poached chicken samples (>90%) was classified into Class A and Class B. Of those with poor microbiological quality, post-cooking contamination and prolonged storage within the temperature danger zone (4~60^{o}C) was implicated. To ensure food safety, members of the trade and the public should always observe good personal and food hygiene.

* According to the Microbiological Guidelines for Ready-to-eat Food, the microbiological assessment of ready-to-eat food will lead to the classification of the food quality into one of the following four classes:
Class A: the microbiological status of the food sample is satisfactory.
Class B: the microbiological status of the food sample is less than satisfactory but still acceptable for consumption.
Class C: the microbiological status of the food sample is unsatisfactory. Licensees of food premises should be advised to investigate and find out the causes and to adopt measures to improve the hygienic conditions.
Class D: the microbiological status of the food sample is unacceptable. The food sample contains unacceptable levels of specific pathogens that is potentially hazardous to the consumer.

Advice to trade

- Estimate the demand of poached chicken carefully to avoid over-production and prevent prolonged storage of poached chicken at room temperature.
- Implement suitable timetable for individual poached chicken production process to minimise storage period at room temperature.
- Cook thoroughly. The centre of the thickest part of the poached chicken should reach at least 75^{o}C.
- Cool poached chicken from 60^{o}C to 20^{o}C within 2 hours or less.
- Keep record to indicate how long the poached chicken has been stored at room temperature after cooling.
- If the poached chicken is held at room temperature for less than 2 hours, it should be refrigerated for final use later or used before the 4 hours limit is up.
- If the poached chicken has been held at room temperature for more than 2 hours but less than 4 hours, it should be used within the 4 hours limit is up but it cannot be returned to the refrigerator.
- If the poached chicken has been held at room temperature for more than 4 hours, it should be discarded.
- Wash hands thoroughly with soapy water for 20 seconds before and after handling foods.

Advice to public

- Patronise licensed and reliable food premises.
- Avoid prolonged storage of poached chicken at room temperature.
- Consume poached chicken as soon as possible and try to eat it up in a meal.

Microbiological Quality of Poached Chicken for Sale in Retail Outlets

OBJECTIVES

This study aims to determine the microbiological quality of poached chicken for sale and sauce for soaking and/or dressing poached chicken in retail outlets. Results of this study provide an overview of risks associated with poached chicken consumption in Hong Kong and offer scientific information to identify critical control points (CCP) in poached chicken production process.

INTRODUCTION

2. Poached chicken is a popular dish in Hong Kong as well as Chinese restaurants all over the world. It is prepared by immersing the raw chicken into hot water until it is cooked.

3. The traditional processing practices of poached chicken make it generally susceptible to microbial growth and post-processing contamination. Key steps involved in generic poached chicken production are illustrated in the schematic diagram at Figure 1.

4. In order to make a poached chicken tender and juicy, it is a common practice that once the whole raw chicken is immersed in boiling water, the heat is turned off or switched to a low fire, and stewed for a period of time i.e. about 30 to 45 minutes depending on the size of the chicken, number of chickens being cooked and the amount of boiling

water used etc. This cooking practice may be inadequate to kill all pathogens that are commonly isolated from chicken carcasses.[1,2,3]

5. Unlike siu-mei products, poached chicken is often stewed in plain water, which may not be able to reduce the water activity of the final product significantly. Besides, poached chicken is often kept or displayed at room temperature, within the temperature danger zone, for several hours and not commonly reheated before consumption.

6. Keeping poached chicken (whole or chopped) in an uncovered compartment generally increases the cross-contamination risk especially when it is placed near the raw food and other areas such as fish preparation areas and fish tanks for keeping live fish in food premises. *Vibrio parahaemolyticus* is frequently isolated from marine environment and some of its infections have been associated with the consumption of raw, undercooked, or re-contaminated cooked fish and shellfish[4], however, other foods, such as poached chicken, might also be tainted by this pathogen through cross-contamination.

7. Besides, it is a common and traditional practice to handle poached chicken with bare hands, where *Staphylococcus aureus* is naturally present.[5] Following time and temperature abuses, *Staphylococcus aureus* may grow and produce enterotoxin. In some production processes, poached chicken is soaked and/or dressed with sauce, which may also affect the microbiological quality of the final product. Based on the potential risk factors, poached chicken is regarded as one of the potentially hazardous foods.

8. In 2001, the Food and Environmental Hygiene Department (FEHD) performed a Microbiological Risk Assessment Study on Siu-mei

and Lo-mei. Among the unsatisfactory samples in terms of hygienic quality, 23% were steamed plain chickens, a type of poached chicken.[6] In the same study, *Salmonella* spp. and high level of *Staphylococcus aureus* were also detected in 2 respective steamed plain chicken samples.

9. As of 18 July 2008, there were 89 food poisoning outbreaks associated with chicken consumption during the period of 1 June 2006 to 31 May 2007, accounting for 11.2% of the total food poisoning outbreaks reported. However, breakdown on the exact number of food poisoning cases associated with poached chicken consumption was not available in Hong Kong.

10. To ensure food safety, results of this study would provide a general picture of the microbiological quality of poached chicken for sale in local retail outlets and offer information for future risk management, including prioritising resources in food surveillance activities. Critical control points (CCPs) identified in this study could help suggest ways to prevent, reduce or minimise the microbiological hazards associated with poached chicken.

SCOPE OF STUDY

11. Poached chicken intended for sale as well as sauce intended for soaking and/or dressing poached chicken in retail outlets were the target samples. For the purposes of this study, poached chicken referred to steamed plain chicken, steamed chicken with salted sauce, Hainan chicken, Shajiang chicken and that is produced by poaching the raw chicken in hot water until it is cooked.

METHODOLOGY

Sampling

12. The sampling period was between mid July and September 2007.

13. A total of 247 poached chickens and 70 sauces were collected by health inspectors from different types of food premises in Kowloon, New Territories and Hong Kong Island:

- Restaurants in hotels;
- Chinese restaurants;
- Fast food restaurants/ food courts/ canteens;
- Siu-mei and Lo-mei shops; and
- Supermarkets.

Sampling distribution of poached chicken and sauce among these categories are outlined in Table 1 and 2 respectively.

Table 1. Sampling distribution in different regions: poached chicken

Regions	Number of samples taken					
	RH	**CR**	**FR**	**SLS**	**SuM**	**Region Total**
Hong Kong Island	9	31	12	19	8	**79**
Kowloon	12	39	6	20	11	**88**
New Territories	8	29	13	17	13	**80**
Total	**29**	**99**	**31**	**56**	**32**	**247**

Table 2. Sampling distribution in different regions: sauce

Regions	Number of samples taken					
	RH	**CR**	**FR**	**SLS (with FF licence)**	**SuM**	**Region Total**
Hong Kong Island	3	10	2	7	2	**24**
Kowloon	4	11	1	5	1	**22**
New Territories	3	9	3	6	3	**24**
Total	**10**	**30**	**6**	**18**	**6**	**70**

RH = Restaurants in hotels
CR = Chinese restaurants
FR = Fast food restaurants/ Food courts/ Canteens
SLS = Siu-mei and Lo-mei shops (including those in Public Markets and Cooked Food Centres)
FF = Food factory
SuM = Supermarkets

14. Health inspectors were required to note down the temperature of poached chicken and sauce during sampling. Food premises were selected by the responsible health inspectors by applying the following criteria:

(i) take samples from different districts within the region;

(ii) avoid sampling at different outlets belonging to the same retail chain.

Laboratory analysis

15. All samples, being kept at 4°C or below during transport, were submitted to the Public Health Laboratory Services Branch of the Centre for Health Protection, Department of Health for analysis within 4 hours of sampling. Aerobic colony count (ACC), presence or absence of *Salmonella* spp. as well as *Vibrio parahaemolyticus* and *Staphylococcus aureus* counts were used to reflect the microbiological quality of poached chicken and sauce.

16. The enumeration of aerobic colony count and detection of *Salmonella* spp. were performed respectively according to National

Standard Method F 11 Issue 1 and F 13 Issue 1 published by Health Protection Agency in the UK. *Staphylococcus aureus* counts were enumerated by AOAC Official Method 2003.11 and samples with unsatisfactory counts were double-confirmed by ISO 6888-2. *Vibrio parahaemolyticus* was enumerated by the spread plate method using thiosulfate citrate bile sucrose agar.

Result analysis

17. The microbiological results of poached chicken and sauce were analysed by the Risk Assessment Section of the Centre for Food Safety. The microbiological quality of samples was assessed against the criteria listed in Table 3. This part of the criteria was extracted from the Microbiological Guidelines for Ready-to-eat Food issued by the Centre for Food Safety.[7]

Table 3. Microbiological criteria used in this study

Microbiological parameter	**Microbiological quality** Colony-forming unit (cfu) per gram			
	Satisfactory (Class A)	Acceptable (Class B)	Unsatisfactory (Class C)	Unacceptable (Class D)
Aerobic colony count†	$<10^5$	10^5 - $<10^6$	$\geq 10^6$	N/A
Salmonella spp.	Not detected in 25 g	N/A	N/A	Present in 25 g
Vibrio parahaemolyticus	<20	20 - <100	100 - $<10^3$	$\geq 10^3$
Staphylococcus aureus	<20	20 - <100	100 - $<10^4$	$\geq 10^4$

†According to the Microbiological Guidelines for Ready-to-eat Food, siu-mei and lo-mei belong to Category 3 when assessing the aerobic colony count
N/A denotes "Not applicable"

RESULTS

Microbiological parameters

18. Four microbiological parameters (i.e. aerobic colony count, *Salmonella* spp., *Vibrio parahaemolyticus* and *Staphylococcus aureus*) were examined in this study.

19. Aerobic colony count (ACC) is a count of bacteria which includes those naturally occur in most foods and those as a result of contamination. The number of bacteria increases significantly over time in response to poor temperature control of the product. It was used as a quality indicator for poached chicken and sauce in this study.

20. *Salmonella* spp., *Vibrio parahaemolyticus* and *Staphylococcus aureus* are pathogenic bacteria that may cause food poisoning. They were used to evaluate the safety of poached chicken and sauce in this study.

Analytical results

21. The overall microbiological results of the poached chicken tested are presented in Table 4. Out of the 247 poached chickens tested; the ACC in 200 (81.0%) samples was less than 10^5 cfu/g. *Salmonella* spp. was not detected in any samples. All poached chickens had *Vibrio parahaemolyticus* counts less than 20 cfu/g. More than 90% of the poached chickens contained less than 20 cfu/g *Staphylococcus aureus*. However, the *Staphylococcus aureus* count in 2 samples exceeded 10^4 cfu/g, falling into the unacceptable range.

Table 4. Microbiological results of poached chicken (Number of samples=247)

	Microbiological results								
	Detected in 25g	Not detected in 25 g	<20 cfu per g	20-<10^2 cfu per g	10^2-<10^3 cfu per g	10^3-<10^4 cfu per g	10^4-<10^5 cfu per g	10^5-<10^6 cfu per g	≥10^6 cfu per g
Aerobic colony count			126			43	31	31	16
Salmonella spp.	0	247							
Vibrio parahaemolyticus			247	0	0	0	0	0	0
Staphylococcus aureus			229	8	8	0	1	1	0

22. When compared with the microbiological limits set out in the Microbiological Guidelines for Ready-to-eat Food (Table 3), the microbiological quality of 77.7% poached chickens were satisfactory (Class A), 12.6% were acceptable (Class B), 8.9% were unsatisfactory (Class C) and 0.8% were unacceptable (Class D) (Table 5). The 2 samples with unacceptable quality were detected with *Staphylococcus aureus* counts greater than 10^4 cfu/g. Aerobic colony count was the microbiological parameter most often associated with unsatisfactory microbiological quality, 16/247 (6.5%) of the sampled chickens were of unsatisfactory quality under aerobic colony count assessment.

Table 5. Number of poached chicken samples in each of the microbiological quality class, classified in accordance with the Microbiological Guidelines for Ready-to-eat Food

	Satisfactory (Class A)	Acceptable (Class B)	Unsatisfactory (Class C)	Unacceptable (Class D)
Aerobic colony count	200	31	16	N/A
Salmonella spp.	247	0	0	0
Vibrio parahaemolyticus	247	0	0	0
Staphylococcus aureus	229	8	8	2
Overall	192 (77.7%)	31 (12.6%)	22† (8.9%)	2 ‡ (0.8%)

N/A denotes "Not applicable"

†Samples were taken from Chinese restaurants (11); Siu-mei and Lo-mei shops (7); Fast food restaurants/ Food courts/ Canteens (3) and Supermarkets (1)

‡Samples were taken from Chinese restaurants (2)

23. Poached chickens involved in this study were all in ready-to-eat status; some of them might be just cooked or reheated while some of them might be kept at room temperature for a period of time before sale. The temperature of the poached chickens measured during sampling varied from 20 to 91°C, in which about 46.6% were within the temperature danger zone (4~60°C). Those samples kept at temperature danger zone were more likely associated with high ACC and/or high *Staphylococcus aureus* count (Table 6).

Table 6. Number of poached chickens with unsatisfactory or unacceptable quality in relation to the sample temperature

	Out of the temperature danger zone (>60°C)	Within the temperature danger zone (4 ~ 60°C)	Total
Number of samples tested	132	115	247
Aerobic colony count (Unsatisfactory)	4 (3.0%)	12 (10.4%)	16 (6.5%)
Salmonella spp. (Unacceptable)	-	-	-
Vibrio parahaemolyticus (Unsatisfactory/ Unacceptable)	-	-	-
Staphylococcus aureus (Unsatisfactory/ Unacceptable)	2 (1.5%)	8 (7.0%)	10 (4.0%)

24. Generally, sauce intended for soaking and/or dressing poached chicken is neither for direct consumption nor for sale in retail outlets. However, in this study, the microbiological quality of sauce was evaluated making reference to the limits stipulated in the Microbiological Guidelines for Ready-to-eat Food. All 70 sauce samples taken from

various retail outlets were considered to be satisfactory in terms of the amount of pathogens i.e. *Staphylococcus aureus* and *Vibrio parahaemolyticus* counts were less than 20 cfu/g and no *Salmonella* spp. detected in 25g sample. For aerobic colony count, of the sauce samples, 68/70 (97.1%) were less than 1000 cfu/g and the highest ACC detected was 1600 cfu/g, all were satisfactory. The temperatures of more than 95% sauce samples were out of the temperature danger zone (>60^{o}C) during sampling.

DISCUSSION

25. This study showed that majority (>90%) of the poached chickens purchased in retail outlets were of satisfactory and acceptable microbiological quality. Unsatisfactory results were due to high ACC and/or high *Staphylococcus aureus* count. A high ACC in this study does not indicate an immediate risk to public health; however, it reflects a prolonged poor temperature control of the product. For high *Staphylococcus aureus* count, it indicates poor handling and personal hygiene of the food handlers.

26. Regarding sauce intended for soaking and/or dressing poached chicken, the microbiological quality was satisfactory in general. Possible adverse effects on the microbiological quality of the final product are considered to be low given that sauce is in such microbiological quality demonstrated in this study.

27. Poached chicken is regarded as one of the high-risk foods in Hong Kong. From time to time, food poisoning cases suspected to be associated with poached chicken consumption were reported in the

territory. Prolonged storage at room temperature and post-cooking contamination were likely to be the main causes for poor microbiological quality, highlighting the importance of training food handlers in good manufacturing and hygiene practices.

28. Hazard Analysis Critical Control Point (HACCP) is an internationally recognised system to ensure food safety.[8] Its concept can be expressed as a preventive measure for microbiological hazards.[9] However, like many other places[10,11,12], it is difficult to attract small and medium-sized food businesses to be aware, implement and adhere to HACCP system in Hong Kong.

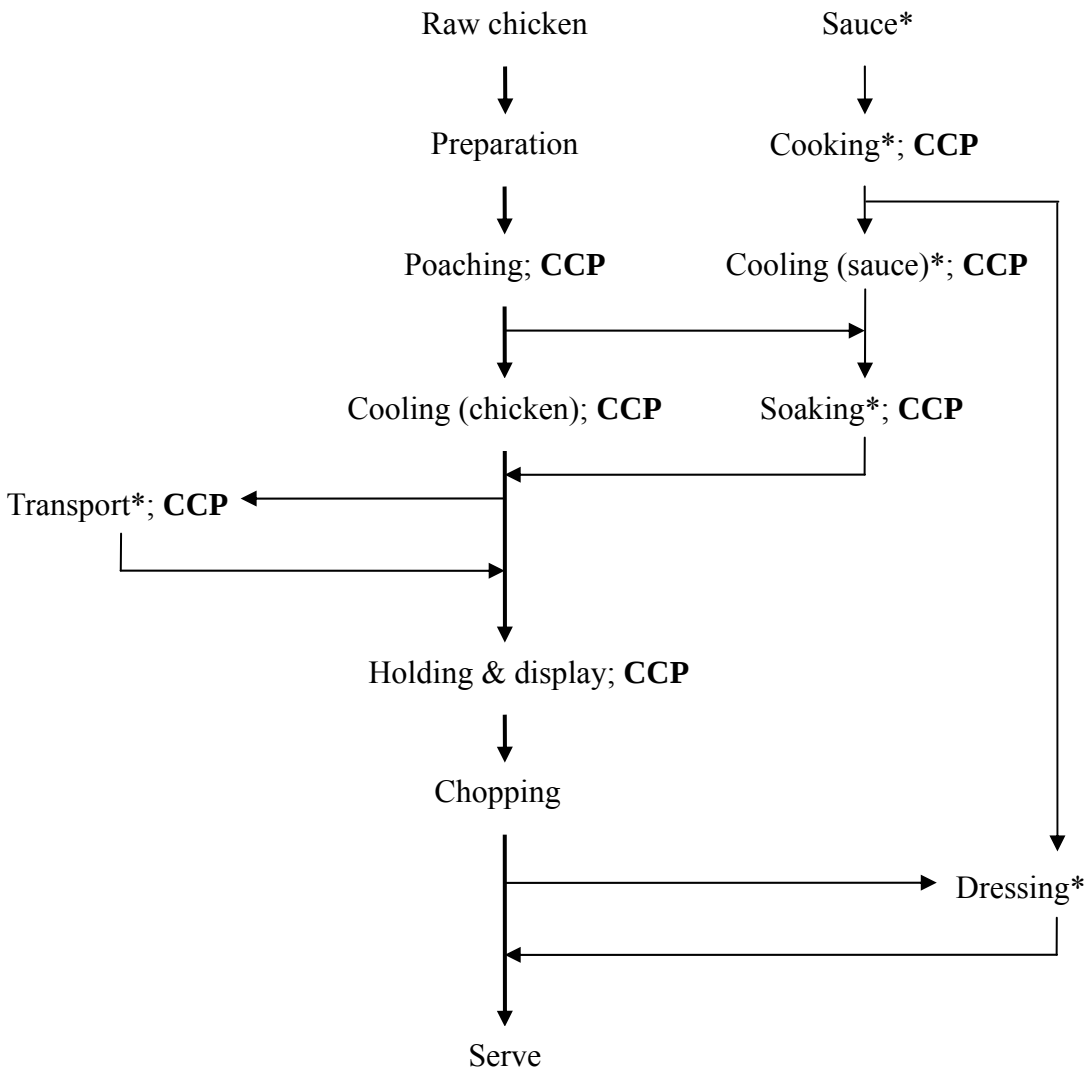
29. To improve the microbiological quality of poached chicken, implementation of HACCP principles in the production process is one way to success.

30. A generic flow diagram of poached chicken production showing Critical Control Points (CCPs) identified is shown in Figure 1. These CCPs were identified based on the HACCP Decision Tree in Table 7. Following to the CCPs identified, the HACCP Data Sheet in Table 8 suggests some control measures, critical limits, monitoring procedures and corrective actions in each CCP so as to monitor the CCPs in the poached chicken production process. Details provided in Figure 1, Table 7 and 8 are for illustration only and do not represent all details could be applied to every single production plant.

31. When preparing poached chicken, the demand should be estimated carefully to avoid over-production and prevent prolonged storage of poached chicken at room temperature. To further reduce

storage period at room temperature, implement suitable timetable for individual poached chicken production process. When poaching the chicken, the centre of the thickest part of the chicken should reach at least 75^{o}C. Cool poached chicken from 60^{o}C to 20^{o}C within 2 hours or less. After cooling, if the poached chicken is held at room temperature for less than 2 hours, it should be refrigerated for final use later or used before the 4 hours limit is up. If the poached chicken has been held at room temperature for more than 2 hours but less than 4 hours, it should be used within the 4 hours limit is up but it cannot be returned to the refrigerator. If the poached chicken has been held at room temperature for more than 4 hours, it should be discarded.

32. Even though sauce is just an ingredient during poached chicken production, it might undermine the microbiological quality of the final product if it is of poor microbiological quality. Sauce intended for soaking and/or dressing poached chicken should be cooked thoroughly before use.



* May be included in some production lines.

Figure 1. A generic flow diagram of poached chicken production showing Critical Control Points (CCPs) identified. Variations are expected to suit particular operations.

Table 7. HACCP decision tree to identify CCPs in poached chicken production

Process step	Identified hazard(s)	**Q1. Do preventive control measures exist?** If yes: Q2 If no: Is control at this step necessary for safety? If no: Not a CCP If yes: Modify step, process or product	**Q2. Is the step specifically designed to eliminate or reduce the likely occurrence of a hazard to an acceptable level?** If yes: A CCP If no: Q3	**Q3. Could contamination with identified hazard(s) occur in excess of acceptable level(s) or could these increase to unacceptable levels?** If yes: Q4 If no: Not a CCP	**Q4. Will a subsequent step eliminate identified hazard(s) or reduce likely occurrence to acceptable level(s)?** If no: A CCP If yes: Not a CCP	CCP
Preparation	Microbiological	Yes	No	Yes	Yes	Not a CCP
Poaching	Microbiological	Yes	Yes	-	-	CCP
Cooling (chicken)	Microbiological	Yes	No	Yes	No	CCP
Cooking	Microbiological	Yes	Yes	-	-	CCP
Cooling (sauce)	Microbiological	Yes	No	Yes	No	CCP
Soaking	Microbiological	Yes	No	Yes	No	CCP
Transport	Microbiological	Yes	No	Yes	No	CCP
Holding & display	Microbiological	Yes	No	Yes	No	CCP
Chopping	Microbiological	Yes	No	No	-	Not a CCP
Dressing	No hazard	-	-	-	-	-

Table 8. HACCP data sheet for poached chicken production

Point of control (raw material or process step)	Hazard(s)	Control measure(s)	CCP parameter(s)	Critical limit(s)	Monitoring procedure(s)	Corrective action(s)
Poaching	Survival of microbial pathogen e.g. *E. coli*, *Salmonella* spp.	Internal temperature of the chicken	Temperature	At least 75^{o}C; the centre of the thickest part of the chicken	Record the internal temperature of the chicken	Keep on poaching until the temperature of the centre of the thickest part of the chicken reach at least 75^{o}C
Cooling (chicken)	Growth of and recontamination with microbial pathogen	Temperature of poached chicken and time for cooling	Temperature & time	Cool from 60^{o}C to 20^{o}C within 2 hours or less	Record the temperature & time	Apply other ways to cool food rapidly
		Water quality	Water quality	Water used for cooling should be fit for human consumption	Testing water samples	Clean water storage tanks and maintain water supply system
Cooking	Survival of microbial pathogen e.g. *E. coli*, *Salmonella* spp.	Temperature of the sauce	Temperature	At least 75^{o}C	Record the temperature	Keep on cooking until the temperature of the sauce reach at least 75^{o}C

Cooling (sauce)	Growth of and recontamination with microbial pathogen	Cleanliness of the container	Cleanliness	Sauce should be cooled in the clean container	Observe the cleanliness of the container	Wash and sanitise the unclean container / discard contaminated food
Soaking	Growth of and recontamination with microbial pathogen	Temperature of poached chicken and time for cooling	Temperature & time	Cool from 60^{o}C to 20^{o}C within 2 hours or less	Record the temperature & time	Apply other ways to cool food rapidly
		Time of poached chicken kept at room temperature	Temperature & time	The time at temperature danger zone before served should be less than 4 hours[§]	Record the temperature & time	Discard
Transport	Growth of and recontamination with microbial pathogen	Time of poached chicken kept at room temperature	Temperature & time	The time at temperature danger zone before served should be less than 4 hours[§]	Record the temperature & time	Discard

[§] The total time that a ready-to-eat potentially hazardous food kept at temperature danger zone doe not include the time taken to cool the food after cooking provided the food has been cooled within the required time and temperatures.

		Transport conditions	Transport conditions	Poached chicken should be transported in covered & clean container	Observe the cover and cleanliness of the container	Wash and sanitise the unclean container / discard contaminated food
Holding & display	Growth of and recontamination with microbial pathogen	Time of poached chicken kept at room temperature	Temperature & time	The time at temperature danger zone before served should be less than 4 hours[§]	Record the temperature & time	Discard
		Cleanliness of the showcase	Cleanliness	Poached chicken should be displayed in the clean showcase	Observe the cleanliness of the showcase	Wash and sanitise the showcase/ discard contaminated food

[§] The total time that a ready-to-eat potentially hazardous food kept at temperature danger zone doe not include the time taken to cool the food after cooking provided the food has been cooled within the required time and temperatures.

Microbiological Guidelines for Ready-to-eat Food

33. As set out in the Microbiological Guidelines for Ready-to-eat Food, the microbiological criteria for poached chicken are extracted in Table 3. In this study, 22 poached chickens were of unsatisfactory quality (Class C) while 2 samples were of unacceptable quality (Class D).

34. For samples with unsatisfactory results (Class C in accordance with the Microbiological Guidelines for Ready-to-eat Food), CFS gave health advice to relevant parties and took follow-up samples. For samples with unacceptable results (Class D in accordance with the foresaid Guidelines), apart from giving health advice and taking follow-up samples, CFS also issued warning letters to the concerned parties. All follow-up samples were of satisfactory quality.

Limitations

35. In this study, only four microbiological parameters (i.e. aerobic colony count, *Salmonella* spp., *Vibrio parahaemolyticus* and *Staphylococcus aureus*) in poached chicken and sauce were examined. However, other pathogens not examined for this study remain a risk because of the likelihood of chicken carcasses contamination and cross-contamination during production.

36. Although 247 poached chickens and 70 sauces were sampled in this study, the numbers were considered small in view of low percentage of unsatisfactory rates. Increasing the number of samples for laboratory analysis could provide a clearer picture of the microbiological quality of poached chicken in Hong Kong, but that would need to be balanced with

the available resources.

CONCLUSION AND RECOMMENDATIONS

37. Findings of this study showed that the microbiological quality of more than 90% of the poached chickens taken from retail outlets was satisfactory and acceptable. Aerobic colony count was the microbiological parameter most often associated with unsatisfactory quality, 16/247 (6.5%) of the sampled chickens were of unsatisfactory quality under aerobic colony count assessment.

38. To improve the microbiological quality of poached chicken, food trade and consumers are advised to observe good personal and hygiene practices; cook poached chicken thoroughly; prevent post-cooking contamination and avoid prolonged storage under temperature danger zone (4~60^{o}C). The Centre for Food Safety has developed guidelines on safe preparation and handling of poached chicken for food trade and consumers in Annex I and II respectively.

Annex I

A Guide to Food Factory, Foodservice and Retail Outlets

Guidelines for Safe Preparation and Handling of Poached Chicken

This guidance is intended for businesses that produce and/or sell poached chicken on the premises. It helps the business implement food safety measures in their operations in order to produce and sell wholesome and safe poached chicken.

2. The basic principles of control include:

I. Eliminate microbial pathogen in raw chicken by
- cooking them thoroughly

II. Avoid contamination of poached chicken with microbial pathogen during
- cooling
- soaking
- transport
- holding and display

III. Prevent growth of microbial pathogen on poached chicken by
- limiting the post-cooking period at room temperature

<u>Purchase and storage of raw chicken</u>

- Obtain raw chicken from approved and reliable sources.
- Inspect the storage conditions and the temperature of raw chicken as well as the documents before acceptance to verify that there is no sign or indication of contamination.
- Retain purchasing invoice to facilitate product tracing.

- Keep raw chicken at 4°C or below if it is not used immediately and separates it from ready-to-eat food. Raw chicken should be covered and placed in the lower compartment of the refrigerator. Ready-to-eat food should also be covered and placed in the upper compartment of the refrigerator. Ideally, use separate refrigerators for storing raw chicken and ready-to-eat food.

Preparation

- Estimate the demand of poached chicken carefully to avoid over-production and prevent prolonged storage of poached chicken at room temperature.
- Implement suitable timetable for individual poached chicken production process to minimise storage period at room temperature.

Poaching

- Cook thoroughly. The centre of the thickest part of the poached chicken should reach at least 75°C.
- Ensure that the juices are clear and not red in colour; blood is not visible when cutting the poached chicken.

Cooling

- Cool poached chicken from 60°C to 20°C within 2 hours or less.
- Use potable water to cool poached chicken.

Purchase and transport of poached chicken

- Obtain poached chicken from licensed and reliable food factories or other approved sources.
- Inspect the incoming goods and documents before acceptance to

verify that there is no sign or indication of contamination to the goods.

- Retain purchasing invoice to facilitate product tracing.
- Use appropriate and clean vehicles to transport poached chicken. During transportation, poached chicken should be protected properly from cross-contamination.

Holding and display

- During display, keep poached chicken in an insect- and dust-proof showcase.
- Keep record to indicate how long the poached chicken has been stored at room temperature after cooling.
- If the poached chicken is held at room temperature for less than 2 hours, it should be refrigerated for final use later or used before the 4 hours limit is up.
- If the poached chicken has been held at room temperature for more than 2 hours but less than 4 hours, it should be used within the 4 hours limit is up but it cannot be returned to the refrigerator.
- If the poached chicken has been held at room temperature for more than 4 hours, it should be discarded.

General hygiene practices

- Use separate utensils to handle raw food and ready-to-eat food such as poached chicken.
- Wash and sanitise cutting boards and knives thoroughly before and after chopping poached chicken.
- Wash hands thoroughly with soapy water for 20 seconds before and after handling foods.
- Clean all poached chicken preparation, storage and display areas on a

daily basis.

- Observe good personal hygiene. Refrain from smoking and eating during preparation. Open wound should be covered.
- Suspend from engaging in any food including poached chicken handling work when suffering or suspected to be suffering from a communicable disease or symptoms of illness such as diarrhoea, vomiting, fever, sore throat and abdominal pain.
- Deploy different staff for handling cash and food.

Annex II

A Guide to Consumers

Guidelines for Safe Preparation and Handling of Poached Chicken

Prepare poached chicken at home

Purchase and storage of raw chicken

- Obtain raw chicken from hygienic and reliable shops.
- Keep raw chicken at 4°C or below if it is not used immediately and separates it from ready-to-eat food. Raw chicken should be covered and placed in the lower compartment of the refrigerator. Ready-to-eat food should also be covered and placed in the upper compartment of the refrigerator.

Preparation

- Plan the production schedule ahead to avoid prolonged storage of poached chicken at room temperature.

Poaching

- Cook thoroughly -
    - ✓ The centre of the thickest part of the poached chicken should reach at least 75°C.
    - ✓ Ensure that the juices are clear and not red in colour; blood is not visible when cutting the poached chicken.

Cooling

- Cool poached chicken from 60°C to 20°C within 2 hours or less.
- Use potable water to cool poached chicken.

Storage

- Avoid prolonged storage of poached chicken at room temperature.
- If the poached chicken is held at room temperature for less than 2 hours, it should be refrigerated for final use later or used before the 4 hours limit is up.
- If the poached chicken has been held at room temperature for more than 2 hours but less than 4 hours, it should be used within the 4 hours limit is up but it cannot be returned to the refrigerator.
- If the poached chicken has been held at room temperature for more than 4 hours, it should be discarded.

Obtain poached chicken from food premises

Purchase

- Patronise licensed and reliable food premises.
- Ensure the observance of the following practices in the premises –

1. See if the food handlers
   - ✓ are of good personal hygiene including refraining from smoking and eating and cover wounds.
   - ✓ use different utensils, cutting boards, knives or dishes for raw and cooked food.
2. See if different staffs are responsible for handling cash and food.
3. See if the food premises are free from flies, cockroaches and other pests.
4. See if foods are handled properly.
   - ✓ Poached chicken is kept in an insect- and dust-proof showcase for display.

- Ask the food handlers about how long the poached chicken has been stored at room temperature. The sum of the time to store poached

chicken at room temperature before consumption should not be more than 4 hours.

Handle poached chicken

Serve

- Consume poached chicken as soon as possible and try to eat it up in a meal.

General hygiene practices

- Use separate utensils to handle raw food and ready-to-eat food such as poached chicken.
- Wash and sanitise cutting boards and knives thoroughly before and after chopping poached chicken.
- Wash hands thoroughly with soapy water for 20 seconds before and after handling foods.

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