

---

Cairo University  
Faculty of Veterinary Medicine, Beni Seuf  
Departement of Food Hygiene and Control

### Curriculum Vitae

Name : Salwa Mohamed Hafez  
Degree : Master degree of Veterinary science  
Nationality : Egyptian  
Specialization : Food Hygiene  
Title of thesis : Psychrotrophic bacteria in chicken products  
Supervision : Prof. Dr. Fathy Ahmed Khalafalla  
Professor of Meat Hygiene, Faculty of Veterinary  
Medicine, Beni Suef, Cairo University.  
Dr. Mohamed Ahmed Hassan EL-Shater  
Senior researcher, Food Hygiene Departement,  
Animal Health Research Institute.  
Key words : Psychrotrophic , Bacteria , Chicken , Products.

### Abstract

This study was carried out to evaluate the psychrotrophic bacteria in chicken products ( 125 samples ) which were collected from shops and supermarkets in Beni Suef city. The total Psychrotrophic counts were  $5 \times 10^6$  ,  $1 \times 10^5$  ,  $2 \times 10^6$  ,  $2 \times 10^5$  and  $6 \times 10^5$  microorg. / gram, respectively , Psychrotrophic Enterobacteriaceae counts were  $2 \times 10^3$  ,  $4 \times 10^3$  ,  $4 \times 10^3$  ,  $2 \times 10^3$  and  $4 \times 10^3$  microorg. / gram , Aeromonas counts were  $3 \times 10^2$  ,  $8 \times 10^2$  ,  $4 \times 10^2$  ,  $2 \times 10^2$  and  $1 \times 10^2$  microorg. / gram and Pseudomonas counts were  $1 \times 10^3$  ,  $2 \times 10^3$  ,  $3 \times 10^3$  ,  $1 \times 10^3$  and  $5 \times 10^2$  microorg. / gram and the isolated Yersinia species were 56 % , 48 % , 56 % , 36 % and 28 % and Listeria species were 24 % , 32 % , 56 % , 32 % and 24 % , respectively.

---

## المستخلص العربي

تهدف هذه الدراسة في فحص عينات الدجاج التي تم جمعها من محلات البقالة والسوبر ماركت في مدينة بنى سويف بواقع ٢٥ عينة من كل منتج من منتجات الأوراك والفيليه والأجنحة والبرجر واللاتشون وتحديد متوسط العدد الكلى للميكروبات المحبة للبرودة والتي كان (  $10 \times 5$  ،  $10 \times 1$  ،  $10 \times 2$  ،  $10 \times 2$  ،  $10 \times 6$  ،  $10 \times 6$  ) ميكروب / جرام على التوالي ) وكانت متوسطات العدد الكلى للبكتريا المعوية المقاومة للبرودة (  $10 \times 2$  ،  $10 \times 4$  ،  $10 \times 4$  ،  $10 \times 2$  ،  $10 \times 4$  ) ميكروب / جرام على التوالي ) وكانت متوسط أعداد ميكروب الأيرموناس (  $10 \times 3$  ،  $10 \times 8$  ،  $10 \times 4$  ،  $10 \times 2$  ) ،  $10 \times 1$  ميكروب / جرام على التوالي ) وميكروب السودوموناس (  $10 \times 1$  ،  $10 \times 2$  ) البارسينيا بنسب (  $56\%$  ،  $48\%$  ،  $56\%$  ،  $36\%$  ،  $28\%$  ) وأخيراً كانت نسبة عزل ميكروب الليستريا (  $24\%$  ،  $32\%$  ،  $56\%$  ،  $32\%$  ،  $24\%$  ) .

---

# CONTENTS

<b>Subject</b>	<b>Page</b>
<b>Introduction</b> .....	<b>1</b>
<b>Review of Literature</b> .....	<b>4</b>
1- Psychrotrophic bacteria in chicken products .....	<b>4</b>
2- Sources of contamination of chicken products .....	<b>28</b>
<b>Material and Methods</b> .....	<b>35</b>
1- Collection of samples .....	<b>35</b>
2- Preparation of samples .....	<b>35</b>
3- Determination of total Psychrotrophic count .....	<b>36</b>
4- Determination of Psychrotrophic Enterobacteriaceae count .....	<b>36</b>
4. (1) Isolation and identification of Psychrotrophic Enterobacteriaceae .....	<b>39</b>
5- Determination of Pseudomonas / Aeromonas count	<b>40</b>
5. (1) Identification of Pseudomonas species.....	<b>40</b>
5. (2) Identification of Aeromonas species .....	<b>42</b>
6- Isolation of Yersinia species .....	<b>44</b>
6. (1) Identification of Yersinia species .....	<b>44</b>
7- Isolation of Listeria species .....	<b>47</b>
7. (1) Identification of Listeria species .....	<b>49</b>
<b>Results</b> .....	<b>50</b>
<b>Discussion</b> .....	<b>75</b>
1- Psychrotrophic counts .....	<b>75</b>
2- Psychrotrophic Enterobacteriaceae counts .....	<b>78</b>
3- Aeromonas counts .....	<b>81</b>
4- Pseudomonas counts .....	<b>83</b>

---

	<b>Page</b>
5- The isolated microorganisms .....	86
a) Isolated Enterobacteriaceae members .....	86
b) Isolated Aeromonas species .....	90
c) Isolated Pseudomonas species .....	92
d) Isolated Yersinia species .....	94
e) Isolated Listeria species .....	96
<b>Conclusion and Recommendations</b> .....	99
<b>Summary</b> .....	102
<b>Reference</b> .....	105
<b>Appendix</b> .....	138
Appendix 1 .....	138
Appendix 2 .....	143
<b>Arabic Summary</b> .....	
1- Isolation of Pseudomonas / Aeromonas count .....	40
2 (1) Identification of Pseudomonas species .....	40
2 (2) Identification of Aeromonas species .....	42
3- Isolation of Yersinia species .....	44
4 (1) Identification of Yersinia species .....	44
4 (2) Identification of Yersinia species .....	44
5- Isolation of Listeria species .....	47
6 (1) Identification of Listeria species .....	48
6 (2) Identification of Listeria species .....	48
7- Results .....	50
8- Discussion .....	75
9- 1- Psychrotrophic counts .....	75
10- 2- Psychrotrophic Enterobacteriaceae counts .....	78
11- 3- Aeromonas counts .....	81
12- 4- Pseudomonas counts .....	83