Ain Shams University
Faculty of Specific Education
Home Economic Department

Using Different Cooking Methods for The Infected Chicken Meat with Some Diseases and Its Effect on Mice

By
Amany Ahmed Abd El-Aziz Mohamed
Ass. Lecture of Home Economic Department
Faculty of Specific Education
South Valley University

THESIS
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Home Economic " Nutrition and Food Science"

Supervised By

Prof. Dr.
Mohamed Kamal El-Sayed Yuossef
Prof. of Food Science and Technology
Faculty of Agriculture – Assiut University
Member of American Academy of sciences

Prof. Dr.
Sanaa Mohamed El-Bendary
Prof. of Nutrition and Food Science,
Home Economic Department
Faculty of Specific education
Ain Shams University

Assi. Prof. Dr.
Nahed Mohamed Hussein
Assi. Prof. of Nutrition and Food Science
Faculty of Specific Education
Ain Shams University

Assi. Prof. Dr.
Abdelrahman Ragab Abdelrahman
Assi. Prof. of Nutrition and Food Science
Faculty of Specific Education
Ain Shams University

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Amany Ahmed Abd El-Aziz Mohamed

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List of Abbreviations

Ala	Alanine
ALT	Alanine amino transferase
APEC	Avian pathogenic *Escherichia coli*
Arg	Arginine
Asp	Aspartic
AST	Asprtate amino transferase
BoEC	Boiled *E. coli* Chicken
BoHC	Boiled Healthy Chicken
BoSC	Boiled Salmonellosis Chicken
BrEC	Braised *E. coli* Chicken
BrHC	Braised Healthy Chicken
BrSC	Braised Salmonellosis Chicken
B.V.	Biological value
BW	Body weight
CFU/g	Colony forming unit per gram
CL	Cooking loss
E.A.A.	Essential amino acid
E. coli	*Escherichia coli*
ExPEC	Extraintestinal pathogenic *Escherichia coli*
FEC	Fried *E. coli* Chicken
FHC	Fried Healthy Chicken
FSC	Fried Salmonellosis Chicken
Glu	Glutamic Acid
Gly	Glycine
His	Histidine
Ile	Isoleuocine
Leu	Leucine
Lys	Lysine
Met	Methionine
NEAAs	Non-essential amino acids

List of Abbreviations (Cont.)

PER	Protein efficiency ratio
Phe	Phenylalanine
Pro	Proline
REC	Roasted *E. coli* Chicken
Resp.	Respectively
RHC	Roasted Healthy Chicken
RSC	Roasted Salmonellosis Chicken
Sal. spp.	*Salmonella* spp.
SE	*Salmonella Enteritidis*
Ser	Serine
TB	Tetrathionate broth
Thre	Threonine
Try	Tryptophan
TSB	Tryptone soya broth
UTIs	Urinary tract infections (UTIs)
Val	Valine

Using different cooking methods for the infected chicken meat with some diseases and its effect on mice

The present study was carried out to investigate the effect of different cooking methods on infected chicken with some diseases (meat / organs) especially, *salmonella enteritidis* and *Escherichia coli* O78 infection. Likewise, the study included the effect of consumption of these meats on the healthy status of rats. The current study was conducted on 75 broiler chickens (Sasso) which were classified randomly into 3 groups. The first group was healthy group that represented the control group, the second group was infected with *Salmonella enteritidis*, and the third group was infected with *E. coli* O78. The results showed a decrease in the percentage of weights in salmonellosis and *E. coli* infected chickens than that in healthy chickens. Salmonella was not isolated from any cooked samples. *E. coli* were not detected in boiled and roasted samples, while such bacteria were isolated from braised livers and fried samples. The proximate chemical composition was varied between healthy chicken meat and infected chicken meat with Salmonella and *E. coli*. Cooking methods had a great influence on the chemical composition of chicken's meat. Rats which fed on diet contained fried or roasted samples had the highest body weight gain, highest levels of lipids serum (cholesterol, triglycerides, VLDL-c and LDL-c), while they had lowest levels of HDL-c, highest levels of ALT, AST, serum urea, creatinine and uric acid compared with other rats groups fed on diet containing boiled or braised ones. As well as the results referred that rats fed on diet contained cooked salmonellosis or *E. coli* infected chicken samples had highest previous parameters compared with rats groups fed on cooked healthy samples prepared by the same method. In general, statistical analysis at 95 % level of confidence ($p < 0.05$) showed the superiority of boiling and braising methods than other studied cooking methods.

Key words: Cooking method - Broiler chickens - Proximate chemical composition – Salmonellosis chicken – *E. coli* infected chicken – Amino acid – minerals – Rats – Lipid profile – Kidney function – Liver function

INTRODUCTION

The production of poultry meat and their products had increased significantly throughout the world in the last decade due to their specific sensory attributes and the increasing tendency of the public to consider white meat as being healthier compared to red meat **(Balamatsia et al., 2006)**. Chicken is one of the world favorite foods, according to United States Department of Agriculture (USDA), it is the species number one consumed by many people worldwide **(Liang, 2005)**. It is considered one of the most widely used meats in the world largely because its protein is of excellent quality and contains all the essential amino acids needed by man, required for growth with high proportion of unsaturated fatty acids and low cholesterol value. Moreover, chicken meat is good source of different types of vitamins as niacin, riboflavin and thiamine; as well as minerals i.e. sodium, calcium, iron, phosphorus, sulpher and iodine **(Abou Hussein, 2007)**.

The available epidemiological data about food-borne illness suggested that broiler meat consumption is still the primary cause and one of the main sources of food-borne infections in humans **(Fitzgerald et al., 2001)**. Total aerobic bacteria, Enterobacteriaceae, Coliforms, and *Escherichia coli* are used as indicators of poor microbiological quality of carcass **(Abu-Ruwaida et al., 1994; Capita et al., 2002; Nortje et al., 1990 & Stolle, 1988)**. During the slaughter and cleaning process most of these microorganisms are eliminated, but subsequent contamination is possible at any stage of the production process, from de-feathering, evisceration, and washing to storage by cooling or freezing **(Kozacinski et al., 2006 & Mead, 2000).**

Escherichia coli is one of the most versatile bacterial species. It alternates between its primary habitat, the gut of vertebrates, where it lives as a commensal (**Tenaillon et al., 2010**).and its secondary habitat, water and sediment **(Savageau, 1983)**. It is a common bacterial pathogen of poultry species and had been generally considered a secondary,