IMPROVEMENT OF QUALITY AND SAFETY OF DRIED CHICKEN FILLETS USING SOME SPICES OR THEIR ESSENTIAL OILS

By

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B.Sc. Agric. Sci. (Food Technology), Fac. Agric., Cairo Univ., 1996
M.Sc. Agric. Sci. (Food Technology), Fac. Agric., Cairo Univ., 2004

THESIS
Submitted in Partial Fulfillment of the Requirements for the Degree of

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In

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(Food Science)

Department of Food Science
Faculty of Agriculture
Cairo University
EGYPT

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APPROVAL SHEET

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Date: 0/00/2014

SUPERVISION SHEET

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LIST OF ABBREVIATIONS

FAO	**: Food and Agriculture Organization**
BHA	**: Butylated Hydroxy Anisole**
BHT	**: Butylated Hydroxy Toluene**
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Name of Candidate: Marwa Farouk Ali Abd EL-Qader **Degree:** Ph.D.
Title of Thesis: Improvement of Quality and Safety of Dried Chicken Fillets Using Some Spices or Their Essential Oils
Supervisors: Dr. Adel Zaki Mohamed Badee
Dr. Ahmed Tawfek El-Akel
Dr. Zoba Mohamed Ali Fouda
Department: Food Science **Approval:** / / 2014

ABSTRACT

This study was carried out to produce dried chicken breast meat fillets as a new product in Egyptian markets by using two drying methods *i.e.,* solar and oven drying, with the utilization of some chosen spices *i.e.,* cinnamon, rosemary and ginger or their volatile oils in the preservation and improvement of the quality of dried chicken meat during storage at ambient temperature (25^0C - 35^0C) up to six months. The obtained results could be summarized as follows: dried chicken breast meat fillets which dried by solar dryer had slightly higher moisture content than those dried by oven dryer, protein content of all dried chicken meat treatments slightly decreased by advancing storage period. There were significant differences in ash content between different dried chicken breast meat treatments meanwhile there were no significant differences in salt content within the group of salt concentration i.e., 8% or 26%. Highest values of total volatile nitrogen were recorded for solar dried chicken meat prepared with 8% brine and spices mixture. Also, thiobarbeturic acid values, acid values and peroxide values of all treatments were affected by both brine concentration and drying method and all of them had the same trend and they were higher for chicken breast meat fillets dried by solar dryer than electric oven dryer. Dried chicken meat, which was salted with 8% brine solution had significantly higher rehydration ratio compared with those salted by 26% brine solution. Moreover, dried chicken meat treatments, which seasoned with volatile oils mixture, showed slightly higher water holding capacity and plasticity than those seasoned with spices mixture. Treatments, which prepared with volatile oils mixture, had lower total bacterial counts than those prepared with spices mixture. Proteolytic bacterial counts were slightly higher in solar dried chicken meat treatments than those dried by oven dryer. Chicken meat treatments, which seasoned by volatile oils mixture and dried by oven dryer, were slightly lower in halophilic bacteria counts compared to those seasoned by spices mixture and dried by solar dryer. All dried chicken breast meat treatments were completely free from Coliform bacteria, lipolytic bacteria, *Salmonella spp., Staphylococcus aureus* and yeasts and molds at zero time and along of storage period. The highest overall acceptability scores were recorded for fresh chicken meat treatment followed by solar dried and oven dried chicken meat treatments which prepared with 8% brine solution and volatile oils mixture without no significant difference between them meanwhile the lowest overall acceptability score was recorded for oven dried chicken meat treatments which prepared with 26% brine solution and spices mixture. Rats fed on hypercholesterolemic diets supplemented with chicken meat seasoned by spices mixture or their volatile oils mixture had significantly lower serum total lipids, triglyceride, total cholesterol, LDL- cholesterol, VLDL- cholesterol, ALT, AST, creatinine and serum urea compared with positive control group.

Key words: Dried chicken meat, solar dryer, oven dryer, salting , seasoning, volatile oils, ginger, cinnamon, rosemary, quality attributes and safety

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