



Suez Canal University  
Faculty of Veterinary Medicine  
Department of Food Hygiene & Control



# **Quality Improvement of Traditional Egyptian Dried Sausage**

**Thesis Presented**

**By**

**Sami Rashad Mohammed Ali Alkazzaz**

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<b>Author</b>	<b>Sami Rashad Mohammed Ali Alkazzaz</b>
<b>Title</b>	<b>Quality Improvement of the Traditional Egyptian Dried Sausage</b>
<b>Faculty</b>	<b>Faculty Veterinary Medicine Suez Canal University</b>
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<b>Supervision</b>	<b>Prof.Dr. Hosny A. Abdelrahman Prof.Dr. Ali Meawad Ahmed Dr. EL-Desoky Hassan I. Dora</b>
<b>Abstract</b>	<p>Quality survey of market samples of traditional dried sausage kept at room temperature was as follow:</p> <p><b>1.Organoleptic and sensory examination:</b> 100 samples of dry sausage were collected randomly from different street vendors, The normal marble cure appearance was reported in 22% of the examined samples. The over cured discoloration appeared in 58 % of the product samples. The brown coloration is represented by 8 %.Green core detected in 4 %. The mouldy growth noticed on the casing of 11% of samples. While fading discoloration which recorded in 12 % of the samples. The normal fleshy cure flavour was reported in 56 % of samples. The rancid, sour and putrid flavour appeared in 28%, 10% and 6% of samples respectively.</p> <p><b>Proximate nutritional composition analysis</b> The mean value of moisture was <math>43.7 \pm 0.41\%</math>.The mean value of protein was <math>15.34 \pm 0.21 \%</math> The mean value of fat was <math>19.99 \pm 0.26 \%</math> with a maximum of 24.3 % and a minimum of 15.1 %.The mean value of ash was <math>4.26 \pm 0.075 \%</math>.The mean value of carbohydrate was <math>13.56 \pm 0.33 \%</math> The mean sodium chloride content was <math>3.25 \pm 0.05 \%</math> The moisture protein ratio (MPR) in the investigated sample was <math>2.91 \pm 0.055</math>.The mean pH value for the examined marketed dry sausage samples was <math>5.14 \pm 0.05</math>, TVB-N value was <math>14.9 \pm 0.44\text{mg} / 100\text{gm}</math>,.The mean TBA value was <math>0.96 \pm 0.037\text{mg malonaldehyde} / \text{kg}</math>. The average residual nitrite was <math>122.68 \pm 2.45 \text{ mg/kg}</math>. Aerobic plate count average was <math>2.6 \times 10^5 \pm 4 \times 10^4 \text{ cfu/g}</math>. The coliform count average was <math>5 \times 10^2 \pm 0.62 \times 10^2 \text{ cfu/g}</math>. The total halophilic count was less than 10 cfu/gm in all examined samples. Staphylococcus aureus isolated from 24 %of the examined samples. While, 16 % of the surveyed samples were contaminated with <i>E coli</i>.</p> <p><b>Part two: Experimental:</b> It was found that celery powder had a substantial effect on some compositional nutritive components such as protein, fat and residual nitrite contents. Also, celery powder had a strong positive effect regarding the TVN and TBA over the storage period compared to the control group and sodium nitrite group. Moreover, the total bacterial counts were reduced significantly in the celery treated group. Celery powder allowed the normal development of sensory attributes in dry fermented sausage which led to the production of naturally cured dry sausage with sensory characteristics equivalent to that prepared with conventional levels of curing salts. Therefore, the replacement of curing salts by vegetable-based curing ingredients is possible and definitely represent a potential benefit on human health.</p>
<b>Keywords</b>	<b>Dried Sausage, protein , fat ,TVN, TBA, Celery , nitrite</b>

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## List of Abbreviations

<b>A.O.A.C</b>	Association of Official Agricultural Chemists
<b>ADI</b>	The acceptable daily intake
<b>APC</b>	The total aerobic plate count
<b>a<sub>w</sub></b>	Water activity
<b>BGLB</b>	Brilliant green lactose bile broth
<b>BHI broth</b>	Brain Heart Infusion Broth
<b>BPA</b>	Baired-Parker medium
<b>CFU</b>	Colony forming unit
<b>CC</b>	Coliform count
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CNC</b>	Coagulase - negative cocci
<b>CP</b>	Pre-converted celery juice powder
<b>DFS</b>	Dried fermented sausage
<b>EC</b>	<i>E. coli</i> broth
<b>ECC</b>	<i>E. coli</i> count
<b>ECDC</b>	European Centre for Disease Prevention and Control
<b>EFSA</b>	European Food Safety Authority
<b>EMB</b>	Eosine Methylene Blue agar
<b>ESS</b>	Egyptian Standards
<b>EU</b>	European Union
<b>FDA</b>	United States Food and Drug Administration
<b>FAO</b>	Food and Agriculture Organization
<b>FSIS</b>	Food Safety and Inspection Service
<b>GAP</b>	Good Agricultural Practices
<b>GMP</b>	Good Manufacturing Practices
<b>HACCP</b>	Hazard Analysis and Critical Control Point
<b>HC</b>	Hemorrhagic colitis
<b>HUS</b>	Hemolytic uremic syndrome
<b>IARC</b>	The International Agency for Research on Cancer
<b>JECFA</b>	Joint FAO/WHO Expert Committee on Food Additives
<b>LAB</b>	Lactic acid bacteria
<b>LST</b>	Lauryl Sulfate Tryptose broth
<b>MAP</b>	Modified atmosphere packaging
<b>Max</b>	Maximum
<b>MHA</b>	Muller Hinton agar
<b>Min</b>	Minimum
<b>MPN</b>	The most probable number
<b>MPR</b>	Moisture protein ratio

<b>MRLs</b>	Maximum Residue Levels
<b>MSA</b>	Mannitol salt agar
<b>NA</b>	Nitrosamines
<b>ND</b>	Not detected
<b>NOS</b>	Nitric oxide synthesis
<b>NaNO<sub>2</sub></b>	Sodium nitrite
<b>NaNO<sub>3</sub></b>	Sodium nitrate
<b>ppm</b>	Part per million = mg/kg=µg/g
<b>PTR–MS</b>	Proton Transfer Reaction–Mass Spectrometer
<b>RASFF</b>	EU Rapid Alert System for Food and Feed portal
<b>RPFA</b>	Rabbit plasma fibrinogen agar
<b>RTE</b>	Ready-to-eat
<b>SC</b>	Starter culture
<b>SE</b>	Standard error
<b>SEs</b>	Staphylococcal enterotoxins
<b>STEC</b>	Shiga Toxin-producing <i>Escherichia coli</i>
<b>TBA</b>	Thiobarbituric acid
<b>TBARS</b>	Thiobarbituric acid reactive substances
<b>TSI</b>	The Triple Sugar Iron agar
<b>TVB-N</b>	Total volatile bases nitrogen
<b>TVC</b>	Total viable count
<b>US.FDA</b>	Food and drug administration of United States
<b>WHO</b>	World Health Organization
<b>XLD</b>	Xylose Lysine Deoxycholate agar

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