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### Summary

Eighty samples of canned meat ( 20 imported corned beef, 20 imported canned luncheon, 20 local canned meat and 20 local canned sausage) were collected and subjected to chemical examinations.

Chemical analysis of the samples revealed that the mean values of protein and fat were  $12.8 \pm 0.04$  %,  $10.32 \pm 0.04$  % in imported corned beef respectively, while they were  $11.8 \pm 0.07$  % and  $10.2 \pm 0.08$  % in imported canned luncheon respectively, on the other hand, they were  $12.9 \pm 0.09$  % and  $9.9 \pm 0.05$  % in local canned meat, while in local canned sausage they were  $11.2 \pm 0.02$  % and  $9.4 \pm 0.09$  respectively.

Regarding chemical additives, the mean values of nitrites, phosphates, sodium chloride and ascorbate were  $100.9 \pm 9.2$  ppm,  $0.5 \pm 0.02$ %,  $0.68 \pm 0.03$ % and  $244.7 \pm 40.6$  ppm in imported corned beef respectively, while they were  $72.8 \pm 5.1$  ppm,  $0.86 \pm 0.01$  % ,  $0.38 \pm 0.02$  % and  $198 \pm 25.9$  ppm in imported canned luncheon respectively. On the other hand, they were  $131 \pm 7.6$  ppm,  $0.36 \pm 0.01$  %,  $0.47 \pm 0.02$ % and 0 ppm in local canned meat respectively ( all local canned meat were free from ascorbate), while in local canned sausage they were  $54 \pm 6.7$  ppm,  $0.52 \pm 0.02$  %,  $0.43 \pm 0.01$  % and  $262 \pm 38$  ppm respectively.

Chemical examinations of extenders revealed that all imported corned beef samples were free from starch and the mean value of soy protein was  $4.59 \pm 0.52$  %. In imported canned luncheon, the mean values of starch and soy

protein were  $5.6\pm 0.7$  % and  $5.34\pm 0.54$  % respectively, on the other hand, in local canned meat they were  $5.5\pm 0.9$  % and  $3.18\pm 0.31$  % respectively, while in local canned sausage they were  $1.9\pm 0.2$  % and  $5.36\pm 0.54$  % respectively.

Regarding some spoilage parameters, the mean value of pH, total volatile basic nitrogen ( TVB-N) and thiobarbituric acid value (TBA) were  $6.09\pm 0.02$ ,  $25.65\pm 1.57$  mg/100 mg and  $0.55\pm 0.01$  mg malonaldehyde/kg in imported corned beef, respectively, while they were  $6.18\pm 0.07$ ,  $23.34\pm 0.29$  mg /100 mg and  $0.39\pm 0.01$  mg MD/kg in imported canned luncheon respectively. On the other hand, they were  $6.18\pm 0.07$ ,  $25.72\pm 0.46$  mg/100 mg and  $0.43\pm 0.01$  mg MD/ kg in local canned meat respectively, while they were  $6.11\pm 0.57$ ,  $14.83\pm 0.71$  mg / 100 mg and  $0.31\pm 0.01$  mg MD/ kg respectively.

The obtained results were compared according the limits of Egyptian Organization for Standardization and Quality Control "E.O.S.Q.C".

All examined canned meat products were less than the minimum permissible limits of protein . On the other hand all examined canned meat products were less than the maximum permissible limits of fat .25% of corned beef ,95% of canned sausage and 100% of canned luncheon were less than the maximum permissible limits of nitrites while all local canned meat were exceeding these limits .All examined samples of canned sausage , canned luncheon and 16% of local canned meat exceeded the maximum permissible limits of phosphates .Regarding salt % all examined canned meat products were less than the maximum permissible limits . 40% of corned beef

and 10% of canned sausage exceeded the maximum permissible limits of ascorbates . Regarding the permissible limits of starch all examined corned beef ,canned sausage and 70% of canned luncheon were in agreement with these limits , while 15% of local canned meat were exceeding the limit (10% filling materials including starch and soy protein ). Regarding soy protein % , 15% of examined corned beef exceeded the limit,15% of local canned meat were exceeding the limit (10% filling materials including starch and soy protein ), while all examined canned sausage met the limit (20% filling materials including starch and soy protein ). All examined local canned meat and canned sausage were in agreement with the maximum permissible limits of total volatile basic nitrogen (TVB-N). Finally all local canned meat samples were less than the maximum permissible limit of thiobarbituric acid value (TBA).

### Conclusion and Recommendations

Chemical analysis allows to conclude that meat products are considered as a highly nutritive value food article but the red portion should be increased in relation to other ingredients to increase the protein content.

The results of chemical examinations of chemical additives revealed that there are defects in the amounts and concentrations of chemical additives and the meat plant processors didn't follow the instructions and limits stipulated by E.O.S.Q.C, however ascorbic acid still not be incorporated in the production of local canned meat products as antioxidant and a prophylactic agent against nitrosamines production.

Chemical examinations of extenders ensured that some meat plant processors used starch and soy protein in a high amount to compensate the low amount of red meat portion especially local canned meat that contained high concentrations of starch which will affect on the sensory characteristics and the quality of the product.

Regarding examinations of some spoilage parameters including pH, TVB-N (Total volatile basic nitrogen) and TBA ( thiobarbituric acid), all examined, imported and local canned meat products had high keeping quality, may be due to higher nitrite and phosphate content, presence of ascorbates in almost imported corned beef, canned luncheon and local canned sausage and the nature of canned meat products (vacuum sealed).

## Conclusion and Recommendations

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Although canned meat is considered one of the highest keeping quality products, it may become one of the most harmful products, therefore, the following suggestive measures and recommendations must be considered to produce canned meat of good keeping quality and safety:

1. The raw materials must be added with regard to the permissible limits of E.O.S.Q.C to produce a high nutritive product without risk.
2. Incorporation of Ascorbic acid in local canned meat as it is the most cheap and the common commercial canned meat product consumed in Egypt provided that ascorbic acid doesn't over the limits that E.O.S.Q.C will give.
3. Chemical additives and spices must be sterile and of high microbiological stability and the meat processors should follow the limits and standards given by E.O.S.Q.C.
4. Veterinary supervision for all stages of manufacture.
5. Education programs for the authorize personnel of the plant with special interest to the hygienic practice, self hygiene and the standard measures of raw materials and additives given by E.O.S.Q.C.
6. All steps of canned meat manufacture must be done under high sterile condition.