



DETECTION OF SOME HORMONES AND RESIDUES ANTIBIOTICS IN IMPORTED RED MEATS

Aliaa Saadoon Abdul-Razaq & Sudad Jasim Mohammed

Center for Market Research & Consumer Protection/ University of Baghdad/Baghdad/Iraq

ABSTRACT

The study aims to identify the contamination of imported red meat in Iraq by estimating the level of certain hormones and antibiotics, included imported red meat samples collected from 9 different kinds of brands, including: Al-fakher, Albaraka, Alkanz, Almurad, Jcibemajal and other division, including without Brand (unidentified). For the level of certain hormones results have shown that the hormone Estradiol (estrogen) has a high level in these models where value ranged between (250 > - 2000 <) pg / ml and teams significantly ($p < 0.05$), the hormone testosterone was within levels less differentiated and higher than the allowable limit and moral difference ($p < 0.05$), and as for the progesterone hormone has been mixed within the allowable level and top of it and a significant difference ($p < 0.05$). As for the presence of residues of antibiotics in imported red meat under study models, it was possess effective inhibitory in all models toward the bacteria *E. coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* and diameter of inhibitory ranged between (5-25) mm leads to the presence of the antibiotic Tetracycline. We conclude from the above study that all imported red meat available in local markets continuously detect contamination of hormones and antibiotics, which has a significant impact in maintaining the health of consumers.

KEYWORDS: red meats, hormones, antibiotics.

INTRODUCTION

Meat is considered the most important products to feed humans since their existence on earth, they were hunting animals to get meat as food and after that started taming them and growing them in order to help in farming and make use of them as a source of food and milk and fleece and leather and fur^[2], and linguistic books unanimously agreed that the word meat is Arabic word, and meat was known to be one of the most important meals for the ancient Egyptians and they were presenting it as a sacrifice for gods, and the date of inspecting meat in Egypt goes back to the year 1827^[7], the meat is defined as the masculine tissues of an animal: nerves and blood vessels and fat and tendons < meat the most important foods for humans because of its content of proteins and fat and carbohydrate and vitamins and mineral elements heavy and light and also rare elements like: zinc and selenium that has high nutritious value for human body^[2,5,7]. The meat that is fit for human consumption is divided into: red meat: cows, water buffalos, sheep, goats, camels, pigs, rabbits. And white meat: chickens, turkey, ducks, geese, pigeons. And sea foods like: fish and shrimps. And the meat of wild animals that are fit for human consumption like: guzzles and mountain goats^[7]. Freezing is considered one of the most common way of preserving meat and its products by stop life activities and breeding of microorganisms that causes meat decay like salmonella because freezing helps on preserving meat and its products for longer time, and because fresh and cooled down and frozen meat goes through several physical and chemical

and microbiological changes that contributes to the decay of meat and in order to supply meat fit for human

consumption, standard specification were set that includes several general and health demands and the important requirement are the meat should not contain antibiotics and coloring materials and hormones and other requirements, where in the recent years the farmers desire to increase production and reduce the number of ill and dead animals to the minimum level. so they started using medications in animal production and also using hormones to make the meat more tender and increase the fat content but it causes harms to human health such as cancer and other diseases^[1,3,4,5,6,8,9]. According to the above mentioned facts the study aims at revealing the residuals of antibiotics and hormones that are added to the imported red meat available in Iraqi local markets, because it became an open market for importing from different origins and without standardized rules because of the absence of monitoring departments and the weak awareness among importers to identify its fitness for human consumption.

MATERIALS & METHODS

Sample gathering

The samples gathered were from imported red meat from local markets in Baghdad governorate at 2016 and it involved 9 nine types with different trademarks: Alfkhir, Albekkah, Alkenz, Almurad, and jekerbamjal, and 3 three samples with no trademarks two of them are of unknown producer or origin as in table (1). And it was preserved in (-18°C) in the lab of center of market research and consumer protection.

Testing for hormones

A method was adopted used by AHMED and ZEITOUN (2011)^[12], by using the device Elisys Uno Human.

Testing for antibiotics

A method was adopted used by Zaitchenko (1985)^[11].

Statistical analysis

The statistical program (SAS- Statistical Analysis system) (2012) was used to analyze the data to study the effect of

different factors in the studied characteristics according to random full design (CRD) and the differences were compared between the mean values by testing the least difference (LSD)^[10].

TABLE 1: statistical survey of reference card for imported red meats available in the local market at 2016

No.	Trademark		Product type	Name and address of product	Shape of package	Type of package	Net weight	Country of origin	Fit for consumption	
	In Arabic	In E							Production date	Expiry date
1	الفاخر	Alfkhir	Frozen calf without bones	Alfkhir for food products	Cylindrical	Nylon packaging	1 kg	India	19/2015	9/2016
2	البركة	Alberekah	Minced meat (Islamic) halal	Ardh Alberekah co. for agricultural investment and food industry ltd.	Cylindrical	Nylon packaging	300gm	Iraq	1/2016	5/2016
3	الكنز	Alkenz	Minced calf meat	-	Rectangular	Plastic packaging	275+-25gm	Iraq	12/2/2016	20/5/2016
4	الفاخر	Alfkhir	Thigh of calf frozen without bones	Alfkhir for food products Amman-Jordan	Cylindrical	Nylon packaging	2kg	India	Un clear	
5	المراد	-	Minced beef	Berekat Almurad co. for trading and manufacturing food supplies limited responsibility	Rectangular	Plastic packaging	250gm	Iraq	27/2/2016	26/6/2016
6	جكر بامجال	-	Chicken liver	-	Rectangular	Styrofoam and Nylon packaging	400gm	Iran	28/3/2016	28/11/2016
7	-	-	Cow's liver	-	-	-	-	Unknown origin	-	-
8	-	-	Minced meat	-	-	-	-	Unknown origin	-	-
9	-	-	Thigh meat of calf	-	Cylindrical	Nylon packaging	4.5kg	India	3/2016	17/2/2017

RESULTS & DISCUSSION**Hormones estimate**

It's shown in table 2 that the highest rate of hormone Estradiol in red meats imported by Alfkhir (Frozen calf without bones) with the amount 2000 pg/ml and less than this in red meat with trademark: Alberekah, Alkenz, Alfkhir (calf thigh) with amount 250 pg/ml and that was mentioned above are the highest rates in the allowed limits that are 15-60 pg/ml. as for the unknown trademark that was cow's liver, it didn't contain a proportion of this hormone and this complies with what the Iraqi standard specifications set out no. 1/1185 and no. 2/1185 and also

Saudi standard specifications no. 44 and no. 116 that requires. The absence of hormones from red meats^[3, 4, 5, 6] acknowledging that all samples in the study was with difference of ($p < 0.05$)

Table 3, shows the concentration of hormone Testosterone as within allowed limits 8,6-0.6 ng/ml for imported red meats with trademark Jeker Bamjal and the two samples 7 and 8 unknown origin (Cow's liver and Minced meat) 0.7 and 0.2 respectively. As for the rest of trademarks it had very high rate $16 < \text{ng/ml}$ and all the samples has difference of ($p < 0.05$), and it is not consistent with the provisions of Iraqi and Saudi standard specification^[3,4,5,6].

TABLE 2: hormone Estradiol concentration in samples of imported meat

Sample no.	Imported red meat	hormone Estradiol concentration (pg/ml)
1	Frozen calf without bones	>2000.0
2	Alberekah	<250.0
3	Alkenz	<250.0
4	Alfkhir (Thigh meat of calf)	<250.0
5	Almurad	910.0
6	jeker bamjal	835.0
7	Cow's liver (Unknown origin)	0.00
8	Minced meat (Unknown origin)	880.0
9	Without trademark (Thigh meat of calf, calf's leg)	880.0
10	Amount of LSD	114.74*
P<0.05		

Normal value = 15.0 – 60.0 pg/ml

TABLE 3: concentration of hormone Testosterone in samples of imported red meat

Sample no.	Imported red meat	hormone Testosterone concentration (pg/ml)
1	Frozen calf without bones	>16.0
2	Alberekah	>16.0
3	Alkenz	>16.0
4	Alfkhir (Thigh meat of calf)	>16.0
5	Almurad	>16.0
6	jeker bamjal	1.4
7	Cow's liver (Unknown origin)	0.7
8	Minced meat (Unknown origin)	0.2
9	Without trademark (Thigh meat of calf, calf's leg)	>16.0
10	Amount of LSD	5.829*
P<0.05		

Normal value = 0.6 – 8.6 pg/ml

As for table 4 it shows that concentration of hormone Progesterone in imported red meats with the trademarks: Almurad and the two samples 7 and 9 without trademarks are within allowed limits 1-0.0 ng/ml. as for the rest of the trademarks they were higher than allowed limits and all

the samples have difference of ($p < 0.05$). we conclude from that all the red meats in the study don't comply with the Iraqi and Saudi standard specifications (3,4,5,6) except for sample 7 cow's liver (unknown origin) it complies with provisions of the standards.

TABLE 3: concentration of hormone Progesterone in samples of imported red meat

Sample no.	Imported red meat	hormone Testosterone concentration (pg/ml)
1	Frozen calf without bones	1.3
2	Alberekah	2.3
3	Alkenz	2.3
4	Alfkhir (Thigh meat of calf)	2.4
5	Almurad	0.3
6	jeker bamjal	1.4
7	Cow's liver (Unknown origin)	0.0
8	Minced meat (Unknown origin)	1.3
9	Without trademark (Thigh meat of calf, calf's leg)	1.0
10	Amount of LSD	0.863*
P<0.05*		

Normal value = 0.0 – 1.0 pg/ml

Estimation of antibiotics

We conclude from table 5 that imported red meats in the study contain antibiotics like: Tetracycline that contains inhibitors towards *E. coli* bacteria and *Pseudomonas aeruginosa* and *Staphylococcus aureus* for the trademarks and the unknown origin in the samples in the study as in table 5. And therefore are violating the provisions of the Iraqi standard specifications no. 1/1185 and 2/1185 and Saudi no. 44 and 116 and ^[3,4,5,6]< that requires the

emptiness of these red meats from antibiotics. The presence of antibiotics in red meat tissues affects and hides the fitness of the lab microbiological tests and misleads the test and not knowing the correct amount of microbial contamination in the meat and grants it fitness for human consumption and that causes danger on the consumer's health by getting dangerous diseases such as cancer tumors.

TABLE 5: inhibitors residuals of antibiotics in imported red meats towards bacteria

Sample no.	Imported red meat	<i>E. coli</i> bacteria (mm)	<i>Pseudomonas aeruginosa</i> (mm)	<i>Staphylococcus aureus</i> (mm)
1	Frozen calf without bones	10	10	15
2	Alberekah	12	5	10
3	Alkenz	20	13	7
4	Alfkhir (Thigh meat of calf)	0	10	0
5	Almurad	0	0	10
6	jeker bamjal	20	16	9
7	Cow's liver (Unknown origin)	12	25	15
8	Minced meat (Unknown origin)	15	10	20
9	Without trademark (Thigh meat of calf, calf's leg)	0	15	10

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