Fungal Contamination of Sheep Carcasses at Abattoir Level

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A B S T R A C T

A total of 90 random surface swabs of sheep carcasses from the top surface of hind quarter were collected from three different abattoirs in Gharbia governorate (30 of each) to be examined to evaluate their fungal quality. The obtained results indicated that the incidences of mould contamination in the examined surface swabs of sheep carcasses were 86.67 %, 96.67 % and 83.33 % for Tanta abattoir, El-Mahalla abattoir, and Kafr El-Zayat abattoir, respectively. Furthermore, the total mould count /cm2 in the examined surface swabs of sheep carcasses ranged from1.0× 10 to 4.0 ×104with an average of 4.31×103± 0.69 ×103 for Tanta abattoir., 1.0 x 102 to 5.0 x 102 with an average 2.72×102± 0.44×102 for El-Mahalla abattoir and 1.0 x102 to 6.0 x 102 with an average 2.10×102± 0.38×102 for Kafr El-Zayat abattoir. Totally, 88.89 % of the examined surface swabs contaminated with mould with a mean value of 1.45×103± 0.31×103 /cm2. Accurately, *Aspergillus, Clodosporium, Fusarium Mucor, Penicillium, Rhizopus, Sporotricum, and Trichoderma* species were isolated from 46.67 %, 6.67%, 10.00 %, 3.33 %, 30.00 %, 3.33 %, 6.67% and 6.67 % of the examined surface swabs of sheep carcasses at Tanta abattoir, respectively. Furthermore, *Aspergillus, Cladosporium, Fusarium, Penicillum, Rhizopus, Sporotricum and Thamnidium species* were isolated from 36.67 %, 3.33 %, 3.33 %, 26.67 %, 10 %, 16.67 % and 6.67 % of the examined surface swabs of sheep carcasses at El-Mahalla abattoir. However, *Penicillium spp.* was detected at the highest percentage (43.33 %) followed by *Aspergillus spp*. (30 %), *Mucor spp*. (3.33 %), *Nigrospora spp*. (3.33 %), *Sporotricum spp.* (10 %), *Thamnidium spp.* (6.67 %) and *Trichoderma spp.* (3.33 %) for the examined surface swabs of sheep carcasses at Kafr El-Zayat abattoir. While, Aspergillus species isolated from the examined surface swabs of sheep carcasses in Tanta abattoir were A. flavus (detected at the highest percentage 20 %), followed by A. fumigatus (10 %), A. niger (6.67%), A. nidulans, A. ochraceus, and A.terreus (3.33 % for each). Furthermore, *A. flavus*, *A. niger*, *A. ochraceus*, *A. fumigatus* and *A. terreus* at percentages of 16.67 %, 6.67 %, 6.67 %, 3.33 % and 3.33 % for El-Mahalla abattoir, respectively. However, *A. flavus* (10 %), *A. niger* (10 %), *A. terreus* (6.67 %) and *A. nidulans* (3.33 %) were isolated from the examined surface swabs of sheep carcasses at Kafr El-Zayat abattoir. The incidences of aflatoxigenic *A. flavus* isolated from the examined surface swabs of sheep carcasses were 16.67 %, 10 % and 6.67 % for Tanta abattoir, El-Mahalla abattoir, and Kafr El-Zayat abattoir, respectively. The average concentrations of aflatoxin B1 (µg/L) extracted from the toxigenic strains of *A. flavus* isolated from the examined surface swabs of sheep carcasses were 41.69 ± 2.53 for Tanta abattoir, 32.80 ± 2.14 for El-Mahalla abattoir and 26.85 ± 1.79 for Kafr El-Zayat abattoir. While, the average concentrations of aflatoxin B2 (µg/L) were 18.13 ± 1.45 for Tanta abattoir, 17.21 ± 1.08 for El-Mahalla abattoir and 11.53 ± 0.94 for Kafr El-Zayat abattoir. Results achieved for the average concentrations of aflatoxin G1 (µg/L) were 25.92 ± 2.07 for Tanta abattoir, 18.58 ± 1.72 for El-Mahalla abattoir and 14.56 ± 1.14 for Kafr El-Zayat abattoir. The average concentrations of aflatoxin G2 (µg/L) were 9.73 ± 1.10 for Tanta abattoir, 8.79 ± 0.89 for El-Mahalla abattoir and 5.38 ± 0.64 for Kafr El-Zayat abattoir.

KEY WORDS: sheep carcasses, mold, *Aspergillus*, *Penicillum*, *A.flavus*, Aflatoxin.

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1.INTRODUCTION

Ovine meat is consumed and commercialized in almost all countries around the world, even though the demand for lamb meat is strongly influenced by cultural habits.

Moulds are ubiquitous in nature and contaminate meat and other animal tissues due to lack of hygienic measures during handling, processing, transportation and storage of food [1]. Their presence in meat and meat products are regarded as an indicator of the hygienic conditions under which these products are produced and stored.

The environment inside the slaughter halls including air movement, floors, walls, equipment, hides and intestinal content of the slaughtered animals are considered to be the main sources of fungal contamination of the surrounding environment [2]. Moulds and their mycotoxins are responsible for contamination of meat and its products, which may lead to haemorrhages with hepatotoxic, carcinogenic or immunosuppressive effects[3], food protein deterioration, food poisoning and/or spoilage including stickness, whiskers, black spots, green spots or patches, fat decomposition and offensive odour. Mycotoxins, such as aflatoxins, ochratoxins, patulin and zearalenone, are metabolites produced by many strains of moulds in different food and food products. Aflatoxins are highly toxic, carcinogenic, teratogenic and mutagenic substances to human beings [4]. Ochratoxin-A has a strong nephrotoxic and hepatotoxic effect.

Therefore, this study was conducted to throw out light on the following points:

- Determination of the total mould counts in sheep carcasses at abattoir level.
- Isolation and identification of the isolated moulds from sheep carcasses.
- Identification of the toxigenic types of isolated mould.
- Qualitative and quantitative estimation of aflatoxins.

2. MATERIALS AND METHODS

2.1.Collection of samples

A grand total of 90 random surface swabs of sheep carcasses from the top surface of hind quarter, were collected from 3 abattoirs in Gharbia governorate (30 samples of each). The collected samples were kept in sterile plastic bags and preserved in an ice box, then transferred to the laboratory under complete aseptic conditions without undue delay to be examined to evaluate their mycological quality.

2.2. Mycological examination

Swabs were represented by sterile cotton screw capped plastic tubes which are ready for use.

2.3. Preparation of templates

A template made of metal having an exposed inner area of 10 cm² (2×5 cm) was used to delineate area of sampling. The template were wrapped in aluminum foil and sterilized in hot air oven at 180ºC for 20 minutes.

2.4. Preparation of rinsing fluid

Buffered peptone water 0.1% was used as rinsing and diluents fluid. The fluid was distributed to small heat resistant screw capped tubes, each containing 10 ml of rinsing fluid, and then sterilized in the autoclave at 121ºC for 20 minutes.

2.5. Swabbing of sheep carcasses surfaces

Swabs from sheep carcasses surfaces were taken by using of sterile cotton swabs and templates. The sterilized template was placed firmly against the surface of the carcass to limit the examined area. The

sterile cotton swab was drawn from screw capped plastic tube, moistened in rinsing fluid solution (buffered peptone water 0.1%), then rolled over the limited area of carcass inside the template, rolled in one direction and perpendicular to this direction to represent all the examined area. Finally, the cotton swabs were aseptically retained into the rinsing fluid screw capped tubes containing 10 ml buffered peptone water (0.1 %).

2.6. Preparation of swabs (samples) [5]

2.6.1. Determination of total mould count [6]

Isolation and identification of mould from the examined surface swabs of sheep carcasses: According to their morphological characters, mold colonies were picked up with their surrounding medium under aseptic conditions and transferred to Sabouraud Dextrose agar slopes and incubated at 25oC for 7 days for further identification.

2.6.2.Identification of isolated moulds

Identification of mold genera and species was carried out according to [7] for genus *Aspergillus*, [8] for the other mould genera. The isolated mould strains were subcultured on malt extract agar and Czapek-Dox agar for qualitative estimation. The plates were incubated at 25oC for 1-2 days or more whenever was necessary. Colony identification was carried out by careful observation and measurement of the macro-and microscopically characteristics of the mold colonies.

2.7. Macroscopical examination

Macroscopical examination of mold colonies included the rate and pattern of growth as color, texture, basal and surface mycelia. The examination was carried out by using magnifying hand lens.

2.8. Microscopical Examination

•Wet mount slide methods [9]
•Slide culture method [7]
Aspergillus species [10]
Penicillium species.
Mucor species.
Alternaria species.

2.9.Toxigenicity test for Aspergillus flavus strains

The test was done according to the method recommended by (11). Aflatoxins were produced from *Aspergillus flavus* which was grown in a liquid medium (yeast extract sucrose broth). Yeast extract sucrose media were poured into clean sterilized flasks (100 ml medium each) and sterilized by autoclaving at 121oC for 15 minutes. The media were inoculated with the spores of *Aspergillus flavus* from 7-10 days old cultures and incubated for 6-8 days at 25oC. To each flask, 100 ml chloroform was added and the flasks were vigorously shaken for 1-2 hours using an electrical shaker. The content of each flask was filtered and the filtrate was evaporated at 60oC on a water bath. The residue was diluted in 5ml for chloroform. The concentrations of aflatoxin in these chloroform extract were determined using thin layer chromatography "TLC". Quantities of aflatoxins isolated by this method from chloroform extracts of the culture were determined by comparing ultraviolet fluorescence with standards (B1, B2, G1 and G2).

2.10. Qualitative and quantitative estimation of aflatoxins

This was carried out by TLC as described by [12]. Aflatoxins in extracts of samples were separated and resolved on glass plates coated with silica gel. Developed plates were examined with the aid of ultraviolet light (365nm). Aflatoxins concentrations were determined visually by comparing the intensities of florescence of spots in the samples with those of appropriate aflatoxin standards. Standard

(20 x 20cm) plates of TLC were coated with a layer (0.25mm) of silica gel. The silica gel suspension for coating glass plates were prepared according to the method described by [13] by adding 40 ml of distilled water to 30 gm of silca gel in a conical flask and shaked vigorously for 1 minute then plated and activated at 100oC for 2 hours and then held in a desiccator for activation until they were used within 2 hours. Two lines were drawn on the silica gel plates: the first was 2 cm from the lower edge. The second line was drawn 12 cm upon the lower one. Samples were inoculated at the lower line with 2 cm intervals. Using a micropipette 10 µl of standard aflatoxin solution (containing 5 g/ml) was then spotted in the middle of the plate. Therefore, 10 ul of each sample solution were spotted on both sides of the standard. After spotting the plates they were developed in tank contained chloroform stabilized with (97:3) methanol ethanol. The solvent was let to evaporate in the dark and the plates were irradiated with ultraviolet light, placing the plates 10 cm from the lamp. The spots of B1 and B2 gave blue fluorescence [14]. The B1 fluorescence appears at RF rate of flow of the toxin spot on TLC plate followed by B2, G1 and G2.

2.11.Statistical analysis

The obtained results were statistically analyzed according to [15]. Analysis of variance (ANOVA) test was carried out to check the differences between the levels of mould contamination and concentrations of aflatoxins among the examined samples.

3.RESULTS AND DISSCUSION

The contamination of sheep carcasses with moulds in abattoirs may frequently occur during slaughtering and dressing processes. Such contamination not only responsible for meat spoilage leading to its condemnation and economic losses, but also may constitute a major public health hazard due to the production of mycotoxins [16].

From the results reported in table (1), it is obvious that 86.67%, 96.67% and 83.33% of the examined surface swabs of sheep carcasses at Tanta, El- Mahalla and Kafr-Elzyat abattoirs were contaminated with mould, respectively. Totally, moulds were detected in 88.89% of the examined surface swabs of sheep carcasses at Gharbia abattoirs.

Table (1) indicated that the total mold count /cm2 in the examined surface swabs of sheep carcasses ranged from 1.0x10 to 4.0x104 with a mean value of 4.31 × 103 ± 0.69 × 103 for Tanta abattoir, 1.0 ×102 to 5.0 ×102 with a mean value of 2.72 × 102 ± 0.44 × 102 for El-Mahalla abattoir and 1.0× 102 to 6.0 ×102 with a mean value of 2.10 ×102 ± 0.38 × 102 for Kafr El-Zayat abattoir. Accordingly, the overall mean value of total molds contaminated the sheep carcasses at Gharbia abattoirs was 1.45 ×103 ± 0.31×103 / cm2. The differences between the examined surface swabs of sheep carcasses at Tanta, El-Mahalla and Kafr El-Zayat abattoirs were highly significant differences ($P<0.01$) as a result of total mould count as shown in table (1). Such results are nearly similar with those reported by [17], higher counts were recorded by [18] who recorded that the mean values of total mold counts were 5.67 x 104 ± 0.96 x 104, 2.81 x 103 ± 0.28 x 103. From the previous result, it could be noticed that the mean value of total mould count in Tanta abattoir was more than those of El-Mahalla and Kafr El-Zayat abattoirs. High incidence of mould genera on carcass surfaces indicates bad hygienic measures during stages of preparation and handling of meat [19]. Such variations are expected and may be attributed to the differences in the hygienic conditions during preparation and handling of carcasses, the large number of animals slaughtered at Tanta abattoir and the cross contamination between different carcasses (cattle, camel and buffaloes) inside the abattoir.

Table (1): Statistical analytical results of total mould count/cm^2 in the examined surface swabs of sheep carcasses at Gharbia abattoirs (n=30).

Gharbia abattoirs	Positive samples		Min.	Max.	Mean ± S.E**
	No.	%			
Tanta abattoir	26	86.67	1.0 × 10	4.0×10^4	$4.31 \times 10^3 \pm 0.69 \times 10^3$
El-Mahalla abattoir	29	96.67	1.0×10^2	5.0×10^2	$2.72 \times 10^2 \pm 0.44 \times 10^2$
Kafr El-Zayat abattoir	25	83.33	1.0×10^2	6.0×10^2	$2.10 \times 10^2 \pm 0.38 \times 10^2$
Total	80	88.89	1.0×10	4.0×10^4	$1.45 \times 10^3 \pm 0.31 \times 10^3$

S.E = Standard error of mean **= High significant differences (P<0.01)

Table (2): Incidence of mould species isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs (n=30).

Abattoir / Mould species	Tanta		El-Mahalla		Kafr El-Zayat	
	No.	%	No.	%	No.	%
Aspergillus	14	46.67	11	36.67	9	30.00
Cladosporium	2	6.67	1	3.33	-	-
Fusarium	3	10.00	1	3.33	-	-
Mucor	1	3.33	-	-	1	3.33
Nigrospora	-	-	-	-	1	3.33
Penicillium	9	30.00	8	26.67	13	43.33
Rhizopus	1	3.33	3	10.00	-	-
Sporotricum	2	6.67	5	16.67	3	10.00
Thamnidium	-	-	2	6.67	2	6.67
Trichoderma	2	6.67	-	-	1	3.33

Incidence of mould species isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs was shown in table (2). *Aspergillus* was the most prevalent mould species isolated from surface swabs of sheep carcasses (46.67%, 36.67% and 30%), followed by Penicillium species (30%, 26.67% and 43.33%) at Tanta, El-Mahalla and Kafr El-Zayat abattoirs, respectively. Furthermore, *Cladosporium, Furasium, Mucor, Trichoderma, Rhizopus, Sporotrichum, Thamnidium* and *Nigrospora* were isolated. These results were in agreement with those recorded by [17] and [18]. Identification of *Aspergillus* species isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs was shown in table (3). Out of 14 *Aspergillus* species isolated from Tanta abattoir, 20%, 10%, 3.33%, 6.67%, 3.33% and 3.33% were *A. flavus, A. fumigatus A. nidulans, A. niger, A. ochraceus* and *A. terreus*, respectively. Out of 11 Aspergillus species isolated from El-Mahalla abattoir, 16.67%, 3.33%, 6.67%, 6.67% and 3.33% were *A. flavus, A. fumigatus, A. niger, A. ochraceus* and *A. terreus*, respectively.

Table (3): Identification of *Aspergillus* species isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs (n=30)

Abattoirs / Identified *Aspergilli*	Tanta		El-Mahalla		Kafr El-Zayat	
	No.	%	No.	%	No.	%
A. flavus	6	20.00	5	16.67	3	10.00
A. fumigatus	3	10.00	1	3.33	-	-
A. nidulans	1	3.33	-	-	1	3.33
A. niger	2	6.67	2	6.67	3	10.00
A. ochraceus	1	3.33	2	6.67	-	-
A. terreus	1	3.33	1	3.33	2	6.67
Total)	14	46.67	11	36.67	9	30.00

Table (4): Toxogenicity of aflatoxigenic strains of *Aspergillus flavus* isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs (n=30)

strains / Gharbia abattoirs	Aflatoxigenic strains		Non aflatoxigenic strains	
	No.	%	No.	%
Tanta abattoir	5	16.67	1	3.33
El-Mahalla abattoir	3	10.00	2	6.67
Kafr El-Zayat abattoir	2	6.67	1	3.33
Total	10	11.11	4	4.44

Out of 9 *Aspergillus* species isolated from Kafr El-Zayat abattoir, 10%, 3.33%, 10% and 6.67% were A. flavus, A. nidulans, A. niger and A. terreus, respectively. *Aspergillus* species may lead to infection through mucous membranes of eyes and nostrils, causing pulmonary aspergillosis, allergy or may cause skin lesions, nasal infection (sinusitis) as well as nail and external ear infection (external otitis). Moreover, some species of Aspergillus produce aflatoxins while others could produce patulin and ochratoxin. Aflatoxins are known to have carcinogenic effect in human liver and chronic damage of bone for meat consumers [21]. *Aspergillus flavus* and other species as *A. fumigatus*, *A. niger* and *A. nidulens* can produce mycotoxins in foods. Table (4) showed the toxogenicity of aflatoxigenic strains of *A. flavus* isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs. Aflatoxigenic strains of *A. flavus* were detected in 16.67 %, 10 % and 6.67% of the examined surface swabs of sheep carcasses at Tanta, El-Mahalla and Kafr El-Zayat abattoirs, receptively. Totally, 11.11% of aflatoxigenic strains of *A. flavous* were isolated from examined surface swabs of sheep carcasses at Gharbia abattoirs. While, the non aflatoxigenic strains of *A. flavus* were detected in 3.33 %, 6.67% and 3.33% of the examined surface swabs of sheep carcasses at Tanta, El-Mahalla and Kafr El-Zayat abattoirs, receptively.

Table (5): Average concentrations of aflatoxins (µg/L) extracted from the toxigenic strains of *A. flavus* isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs (n=30)

Abattoir Types of aflatoxins	Tanta abattoir			El-Mahalla abattoir			Kafr El-Zayat abattoir		
	Min	Max.	Mean ± S.E	Min.	Max.	Mean ± S.E	Min.	Max.	Mean ± S.E
Aflatoxin B_1	18.72	62.09	41.69±2.53**	15.73	49.16	32.80±2.14**	10.47	43.25	26.85±1.79**
Aflatoxin B_2	5.36	29.67	18.13 ± 1.45**	6.21	24.55	17.21 ± 1.08**	4.80	18.26	11.53±0.94**
Aflatoxin G_1	7.84	41.26	25.92 ± 2.07**	3.70	32.81	18.58 ± 1.72**	1.96	27.16	14.56±1.14**
Aflatoxin G_2	2.60	16.98	9.73 ± 1.10**	1.94	14.52	8.79 ± 0.89**	1.17	9.59	5.38 ± 0.64**

****=** High significant differences (P<0.01).

Totally, 4.44% of non aflatoxigenic strains of A. flavous were isolated from examined surface swabs of sheep carcasses at Gharbia abattoirs. These results were in agreement with those recorded by [18].

Aflatoxins are the most important mycotoxins produced by *A. flavus* which can result in acute liver cirrhosis, carcinogenic, mutagenic and teratogenic effects to consumers of contaminated food items containing these toxic substances. The production of aflatoxin by *A. flavus* was controlled by oxygen and sodium chloride requirements which increase the mould growth and enhance the production of aflatoxin. Approximately, 50% of *A. flavus and A. parasiticus* strains were toxigenic. In addition, the moisture content of the food above 15% supports the growth of these mould and aflatoxin elaboration [22]. Results achieved in table (5) showed that the average concentrations of aflatoxin B1 (µg/L) extracted from the toxigenic strains of A. flavus isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs ranged from 18.72 to 62.09 with an average 41.69 ± 2.53 for Tanta abattoir, 15.73 to 49.16 with an average 32.80 ± 2.14 for El-Mahalla abattoir and 10.47to 43.25 with an average 26.85 ± 1.79 for Kafr El-Zayat abattoir. Differences associated with the levels of aflatoxin B1 in the examined surface swabs of sheep carcasses at Gharbia abattoirs were highly significant ($P<0.01$) as shown in table (5). Table (5) indicated that that the average concentrations of aflatoxin B2 (µg/L) extracted from the toxigenic strains of A. flavus isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs ranged from 5.36 to 29.67 with an average18.13 ± 1.45 for Tanta abattoir, from 6.21 to 24.55 with an average 17.21 ± 1.08 for El-Mahalla abattoir and 4.80 to 18.26 with an average 11.53 ± 0.94 for Kafr El-Zayat abattoir. Differences associated with the levels of aflatoxin B2 in the examined surface swabs of sheep carcasses at Gharbia abattoirs were highly significant ($P<0.01$) as shown in table (5). Results achieved in table (5) showed that the average concentrations of aflatoxin G1 (µg/L) extracted from the toxigenic strains of A. flavus isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs ranged from 7.84 to 41.26 with an average 25.92 ± 2.07 for Tanta abattoir, 3.70 to 32.81with an average 18.58 ± 1.72 for El-Mahalla abattoir and 1.96 to 27.16 with an average 14.56 ± 1.14 for Kafr El-Zayat abattoir. Differences associated with the levels of aflatoxin G1 in the examined surface swabs of sheep carcasses at Gharbia abattoirs were highly significant ($P<0.01$) as shown in table (5). Results achieved in table (5) showed that the average concentrations of aflatoxin G2 (µg/L) extracted from the toxigenic strains of A. flavus isolated from the examined surface swabs of sheep carcasses at Gharbia abattoirs ranged from 2.60 to 16.98 with an average 9.73 ± 1.10 for Tanta abattoir, 1.94 to 14.52 with an average 8.79 ± 0.89 for El-Mahalla abattoir, 1.17 to 9.59 with an average 5.38 ± 0.64 for Kafr El-Zayat abattoir. Differences associated with the levels of aflatoxin G2 in the examined surface swabs of sheep carcasses at Gharbia abattoirs were highly significant ($P<0.01$) as shown in table (5). It is great magnitude to mention that aflatoxin B1, is the most potent carcinogen even at very low concentrations as compared with other types of aflatoxins [19]. Human exposure to mycotoxins occurs frequently due to consumption of mould contaminated agricultural products or due to transmission from feed to meat (3). Aflatoxins may be introduced to the meat or meat products either by direct contamination resulting from aflatoxin producing mould growth, or by indirect contamination through the use of contaminated feed fed by meat producing animals or through the use of contaminated additives and spices which

are added to improve the quality of meat products [20]. Mycotoxins are carcinogenic, tumorgenic, haemorrhagic, teratogenic, dermatoxic, nephrotoxic and cause hepatic carcinoma in man [3]. Subsequently, world attention must be focused on the toxicity of some moulds in foods where they have potential hazards to man and animals through their mutagenic, teratogenic and carcinogenic effects. However, only within the last 5–10 years that major progresses have been made towards the prevention of spoilage caused by moulds.Finally, it is very significant to prevent the growth and multiplication of such toxic moulds in the food articles and interfere with the production of their mycotoxins to insure human safety.

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التلوث الفطرى لذبائح الأغنام على مستوى المجزر

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الملخص العربى

تم تجميع عدد تسعون (90) عينة من مسحات ذبائح الاغنام من ثلاث مجازر مختلفة داخل محافظة الغربية وهى مجزر طنطا ومجزر المحله الكبرى ومجزر كفر الزيات بواقع (30) مسحه من منطقة الفخذ لكى يتم تقييم التلوث الفطرى بها من كل مجزر وقد دلت نتائج الدراسة أن النسب المئوية لتلوث مسحات ذبائح الاغنام بالفطريات كانت 86.67% لمجزر طنطا ، 96.67% لمجزر المحله الكبرى ، 83.33% لمجزر كفر الزيات . ولقد اظهرت النتائج ان متوسط العدد الكلي للفطريات في مسحات ذبائح الاغنام (جرثومة /سم2) 4.31×310±0.69 ×310 لمجزر طنطا ، 2.72 0.44x210 ±210xلمجزر المحله الكبرى ، 2.10 0.38x210 ±210xلمجزر كفر الزيات .وبشكل عام تم عزل العترات الآتية بالنسب المئوية للفطريات المعزولة : البنسليم 30.00%، الاسبرجليس 46.67% ، ميوكر 3.33% ، رايذوبس 3.33% ، كلادوسبورم 6.67% ، سوبروتراكيم 6.67% ترايكوديرما 6.67% ،فيوزاريم 10.00% لمجزر طنطا ، بينما تم عزل الاسبرجليس بأعلى نسبة 36.67% ويليه البنسليم 26.67% ثم السوبروتراكيم 16.67% ثم الرايذوبس 10.00% ثم ثامنيديم 6.67% ثم كلودسبوريم 3.33%و فيوزاريم 3.33% من مجزر المحله الكبرى ، أما في مجزر كفر الزيات فقد تم عزل فطر البنسليم بأعلى نسبة مئوية (43.33%) عن باقي العترات المعزولة في نفس العينات ويليه فطر الاسبرجيلس30.00%وسوبروتراكيم 10.00%وثامنيديم 6.67%و ميوكر،ترايكوديرما،نيجروسبورا بنسبه3.33 %. وأظهرت النتائج تصنيف لأنواع فطر الاسبرجليس في مسحات ذبائح الاغنام على النحو الآتي:- اسبرجيلس فلافس 20.00% يليه الاسبرجيلس فيوميجاتس10.00% يلية الاسبرجيليس نيجر 6.67% و اسبرجيلس نيديولانز و اسبرجيلس اوكراسيس واسبرجيلس تريس بنسبه 3.33% لهم جميعا في مجزر طنطا ،وقد تم تصنيف اسبرجليس فلافس واسبرجليس فيوميجاتس و اسبرجيلس نيجر واسبرجيلس اوكراسيس و اسبرجليس تريس بنسبة 16.67% ، 3.33% ، 6.67%،6.67%،3.33% على الترتيب فى مجزر المحله الكبرى .وصنف اسبرجليس فلافس 10.00%، اسبرجليس نيجر 10.00%واسبرجيلس تريس 6.67%واسبرجيلس نيديولانز 3.33% فى مجزر كفر الزيات .وكان متوسط تركيز الاسبرجيلس فلافس السام الموجود فى المسحات 16.6% فى العينات المأخوذة من مجزر طنطا ،10.00% فى العينات المأخوذة من مجزر المحله الكبرى،6.67% فى العينات المأخوذة من مجزر كفرالزيات. متوسط تركيز الأفلاتوكيسن B1 (µg/L)في مسحات ذبائح الاغنام المأخوذة من مجازر طنطا،المحله الكبرى،كفرالزيات 41.69 ± 2.53 ، 32.80 ± 2.14 ، 26.85 ± 1.79 على الترتيب. واظهرت النتائج ان متوسط تركيز الأفلاتوكيسن (µg/L) B2 في مسحات ذبائح الاغنام المأخوذة من مجازر طنطا،المحله الكبرى،كفرالزيات 18.13 ± 1.45 ، 17.21 ± 1.08 ، 11.53 ± 0.94 على الترتيب .بينما متوسط تركيز الأفلاتوكسين 2.07 ± 25.92 (µg/L) G1 فى العينات المأخوذة من مجزر طنطا، 18.58 ± 1.72 فى العينات المأخوذة من مجزر المحله الكبرى ، 14.56 ± 1.14 فى العينات المأخوذة من مجزر كفرالزيات . وكان متوسط تركيز الأفلاتوكيسن (µg/L) G2 في مسحات ذبائح الاغنام من مجازر طنطا ،المحله الكبرى،كفرالزيات 25.92 ± 2.07، 18.58 ± 1.72 ، 14.56 ± 1.14 على الترتيب.

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