قسم : الرقابة الصحية على الأغذية .
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دراسة عن تواجد الفطريات في روث الحيوانات المذبوحة في مصر العليا وعلاقتها بصحة اللحوم مع الأخذ في الاعتبار جنس الاسبرجلس

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تلعب الفطريات دورا رئيسيا في فساد اللحوم ومنتجاتها مما يؤدى الى خسائر أقتصادية كبيرة نتيجة الاعدام لتلك اللحوم ومنتجاتها .

وقد شملت الدراسة الفطريات المتواجدة في روث الابقار والاغنام والجمال المذبوحة بمجازر أسيوط وسوهاج ، وقد تم حساب العد الكلي لكل واحد جرام مادة صلبة من الروث كما تم عزل وتصنيف الفطريات من روث تلك الحيوانات.

وقد نوقشت الاجراءات الصحية التي يجب اتباعها لكي تقلل من تلوث الحيوانات المذبوحة بالفطريات.

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INCIDENCE OF MOULDS IN THE INTESTINAL TRACT OF SLAUGHTERED ANIMALS IN RELATION TO MEAT HYGIENE

(With 4 Tables)

By
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SUMMARY

120 faecal samples obtained from slaughtered cattle, sheep and camel were subjected for mycological examination. The average mould count/g faeces were 8000, 137000 and 90000 in the winter time while in summer the average were 1.2 million, 2 million and 1 million in the examined samples of cattle, sheep and camel respectively. The following mould genera could be isolated, Aspergillus, Penicillium Mucor, Rhizopus, Absidia, Geotrichum, Cladosporium, Alternaria, Pithomyes, Fusarium and Paecilomyces. Moreover the genus Aspergillus could be identified into the following species, A.niger, A.terreus, A.flavus link, A.flavus var. columnaris, A.parasiticus, A.oryzae, A.sydowi, A.amstelddami, A.chevalieri, A.ruber, A.nidulans, A.ornatus and A.versicolor.

Suggested measures for improvment the Hygienic standard in the slaughter houses and to minimize the risk of mould contamination of fresh meat were discussed.

INTRODUCTION

Moulds are widely distrbuted in the nature and contaminate meat and meat products through several ways. The intestinal contents of the slaughtered animals were considered as an important source of mould contamination of fresh meat, these were studied by several authors, ROLLE & KOLB, 1954; AINWORTH & AUSTWICK, 1955 a,b; VAN UDEN & SOUSA, 1957; BATISTA, et al. 1961; SIVERS, 1962; MEHNERT, 1965; HADLOCK, 1964; KLARE, 1971; LUND, 1974; ROLLE & MAYER, 1967 and ABDEL-RAHMAN, 1981. Moreover LEISTNER & AYRES, 1967; MOSSEL, et al. 1968; HADLOCK, et al. 1976, 1977; BEUCHAT, 1978; ABDEL-RAHMAN, et al. 1984; ABDEL-RAHMAN and EL-BASSIONY, 1984 stated that the genus Aspergillus and Penicillum were the most predominant mould genera in fresh, stored, cured and processed meat. This work was planned to determine the incidence of the moulds in the intestinal contents of the slaughtered cattle, sheep and camel in Upper Egypt in order to establish the quality and the quantity estimation of mould with their taxonomic position.

MATERIAL and METHODS

120 faecal samples obtained from slaughtered cattle, sheep and camel during the winter and summer times and examined mycologically according to the methods recommended by KLARE (1971) and ABDEL-RAHMAN (1981). The identification of isolates were carried out according to ROPER & FENNEL (1965); ROPER & THOM (1949); SAMSON (1979); ZYCHA, et al. (1969); BARNNETT & HUNTER (1972).

RESULTS

The results were recorded in tables 1, 2, 3 and 4.

DISCUSSION

a) Total mould count:

The results given in table (1) revealed that the total mould count/g total solid of the examined faecal samples of cattle ranged from 1953 to 400000 with mean value of about 77000 in the winter time, while in summer the count ranged from 110000 to 4.2 million with a mean value of 1.2 million. These findings showed a high count in summer and low count in winter than those which are recorded by KLARE (1971) and ABDEL-RAHMAN (1981). The count in the sheep samples in winter laid between 4500 and 625000 with an average of 137000, while in summer the count ranged from 36000 and 17 million with an average of 2.3 million. The axamined faecal samples of camel in winter revealed a count ranged from 3000 to 300000 with an average of 95000, while in summer lied between 84000 and 6.3 million with an average of about 1 million. From the results obtained its clear that the count in summer time is high than those in winter and was attributed the nature and hygiene of the ration.

b) Total Aspergillus count:

The average Aspergillus count/g total solid faeces of the examined samples of cattle given in table (2) were about 27000 and 700000, in sheep 39000 and 1.3 million and in camel 28000 and 515000 in winter and summer times respectively. These findings are nearly similar in their incidence but differ in their percentage to those which are recorded by BATISTA, et al. (1961); KLARE (1971) and ABDEL-RAHMAN (1981).

c) Mould genera:

Cattle: The results given in table (3) showed that the average count and percentage of mould genera in winter and summer were: Aspergillus 26878 (35.1%), 702990 (56.7%), Penicilum 31685 (41.41%), 155225 (12.6%), Mucor 2619 (3.4%), 119468 (9.6%), Absidia 3625 (4.7%), 100675 (8.1%), Rhizopus 4445 (5.8%), 59533 (4.8%), Geotrichum 2793 (3.7%), 13212 (1.1%), Cladosporium 2724 (3.6%), 23580 (1.9%), Fuzarium, Pithomyces, Paecilomyces and unidentified mould genera in percentage less than 1.4%. These findings are nearly similars in the incidence but differed in the percentage to those which are recorded by VAN UDEN and SAUSA (1957); BATISTA, et al. (1961); HADLOK (1964); KLARE (1971) and ABDEL-RAHMAN (1981).

Sheep: The following mould genera could be isolated: Aspergillus, Penicllum, Mucor, Absidia, Rhizopus, Geotrichum, Cladosporium and Fuzarium in the following count and percentage in winter and summer 40000 (28.8%), 1.4 million (60.0%), 40000 (32.2%), 300000 (13.4%), 18000 (12.8%), 130000 (5.6%), 14000 (10.2%), 220000 (9.7%), 603 (0.4%), 58000 (2.5%), 12000 (9.0%),

82000 (3.6%), 5000 (3.6%), 3000 (0.1%), 3900 (2.8%), 50000 (2.2%), while Pithomyces and unidentified mould genera in percentage of 2.9% in summer and 0.2% in winter respectively.

Camel: The isolated mould genera from the examined faecal samples of camel in winter and summer were in the following average count and percentage: Aspergillus 28000 (29%), 520000 (51.8%), Penicillum, 25000 (26.4%), 160000 (6.2%), Absidia 20000 (21.4%), 85000 (8.7%), Rhizopus 1700 (2.0%), 57000 (5.8%), Geotrichum 11000 (12.0%), 4300 (4.3%), Cladosporium 1600 (2.0%), ---, Fuzarium, 3000 (3.0%), ---, Alternaria 1325 (1.1%), 12000 (1.2%), Paecilomyces 354 (0.1%), 54000 (5.5%), unidentified mould genera 83 (0.04%), 140 (0.02%) respectively.

C) Aspergillus species:

The results given in table (4), showed that A.niger, A.terreus, A.flavus link, A.flavus var columnaris and A.nidulans could be from the examined samples of cattle, sheep and camels in the winter and summer times, while the percentage of the identiefed Aspergillus species in cattle in winter and summer were: A.niger (27.4-36.5%), A.terreus (21.5%-8.2%), A.flavus link (15.2%-14.7%), A.flavus var columnaris (3.3%-12.2%), A.nidulans (13.3%-7.3%), A.fumigatus Fres. (8.0%-5.4%), A.amstelodami (5.3%-5.2%), A.Candidus (0.01%-2.8%), while A.parasiticus & A.ruber could be only isolated during the summer times with percentage of 4.8% and 2.9% respectively. A.oryzae A.sydowi in winter time with percentage of 5.7% and 0.3% respectively.

In the examined samples of the sheep the percentage in winter and summer were: A.niger, A.terreus, A.flavus link, A.flavus var columnaris, A.nidulans, A.amstelodami and A.sodywi in percentage of (22.9%-27.1%), (34.6-11.3%), (13.5%-12.3%), (3.9%-18.5%), (0.1%-1.2%), (5.2-11.8%) and (10.6-10.3%) respectively. While A.fumigatus and A.parasitcus could be isolated only in summer time with percentage of 6.9% and 0.6%, A.oryzae, A.chevalieri and A.ruber isolated only in winter time with percentage of 7.2, 0.5 and 1.5% respectively. The camels samples revealed the following Aspergillus species: A.niger, A.terrus, A.flavus link, A.flavus var columnaris, A.parasitcus, A.oryzae, A.nidulans and A.candidus in the following percentages in winter and summer: (30.0-38.2%), (8.4-20.9%), (20.0-13.9%), (17.4-3.6%), (4.4-2.1%), (7.8-1.3%), 3.9-7.6%) and (2.0-1.6%), while A.amstelodami, A.sydowi and A.versicolor could isolated only during the summer times in percent. of 1.8, 2.1 and 6.9% respectively. A.fumigatus, A.ornatus with percentage of 0.9% and 5.1% in the winter times.

From the meat hygiene standpoint the main sources of contamination of fresh meat with moulds are air, water, soil, hand of attendants, utensils and skin, while the major source of contamination which constitutes the public health hazard are the intestinal contents of the slaughtered animals which contaminate the fresh meat with a wide variety of mould species, following negelected sanitary measures during meat preparation.

Therefor the results achieved reported herein, drew the attention to the hygienic measures and instructions in the slaughter houses in addition to special attenttion to the ration hygiene in order to minimize the risk of mould contamination of fresh meat.

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Table (1)
Total mould count/g total solid

	Cattle		Sheep		Camel	
	winter	summer	winter	summer	winter	summer
Minimum	1953	110000	4500	35500	3125	84000
Maximum	400000	4186000	625000	17010000	300300	6375000
Mean	70510	1241228	137159	2309840	94990	992825

Table (2)
Total Aspergillus count/g total solid

	Cattle		Sheep		Camel	
	winter	summer	winter	summer	winter	summer
Minimum	126	23600	1320	12750	1665	47600
Maximum	132600	218400	282200	11970000	115000	3250000
Mean	26800	702990	39400	1386740	27536	515155

Table (3)
The mean and percentage of isolated mould genera in cattle, sheep and camels

Mould genera	CATTLE				SHEEP				CAMELS			
	winter		summer		winter		summer		winter		summer	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
Aspergillus	26875	35.1	702990	56.7	39441	28.8	1386743	60.0	27536	29.0	515155	51.8
Penicillium	31685	41.4	155225	12.6	44167	32.2	308905	13.4	25160	26.4	164190	16.5
Mucor	2619	3.4	119468	9.6	17538	12.8	129568	5.6	2792	3.0	61820	6.2
Absidia	3625	4.7	100675	8.1	13929	10.2	223394	9.7	20375	21.4	85380	8.7
Rhizopus	4445	5.8	59533	4.8	603	0.4	58300	2.5	1735	2.0	57600	5.8
Geotrichum	2793	3.7	13212	1.1	12411	9.0	82318	3.6	11013	12.0	42870	4.3
Cladosporium	2724	3.6	23580	1.9	4948	3.6	3128	0.1	1653	2.0	-	-
Fuzarium	685	0.9	250	0.02	3891	2.8	51050	2.2	2921	3.0	-	-
Alternaria	1054	1.4	-	-	-	-	-	-	1325	1.1	12010	1.2
Pithomyces	-	-	65880	5.3	-	-	66440	2.9	-	-	-	-
Paecilomyces	-	-	-	-	-	-	-	-	354	0.1	53660	5.5
Unidentified genera	-	-	415	0.03	215	0.2	-	-	83	0.04	140	0.02

0.02

Table (4)

The mean and percentage of the identified Aspergillus species in cattle, sheep and camels

Aspergillus species	CATTLE				SHEEP				CAMELS			
	winter		summer		winter		summer		winter		summer	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
A. niger	7336	27.4	265503	36.5	9028	22.9	374848	27.1	8142	30	196420	38.2
A. terresus	5783	21.5	59678	8.2	13650	34.6	156193	11.3	2280	8.4	107654	20.9
A. flavus link	4068	15.2	106570	14.7	5270	13.5	150952	12.3	5442	20	71703	13.9
A. flavus var.colum naris	881	3.3	88400	12.2	1531	3.9	256609	18.5	4728	17.4	18473	3.6
A. parasiticus	-	-	34875	4.8	-	-	7807	0.6	1192	4.4	10940	2.1
A. oryzae	1537	5.7	-	-	2845	7.2	-	-	2110	7.8	6595	1.3
A. nidulans	3567	13.3	52745	7.3	46	0.1	16750	1.2	1060	3.9	39155	7.6
A. amstelodami	1408	5.3	37835	5.2	2056	5.2	164060	11.8	-	-	8935	1.8
A. fumigatus	2139	8.0	39505	5.4	-	-	96160	6.9	256	0.9	-	-
A. sydowi	69	0.3	-	-	4150	10.6	143338	10.3	-	-	10435	2.1
A. candi us	3	0.01	19965	2.8	-	-	-	-	536	2.0	8455	1.6
A. chevalieri	-	-	-	-	205	0.5	-	-	-	-	-	-
A. ornatus	-	-	-	-	-	-	-	-	1377	5.1	-	-
A. ruber	-	-	21225	2.9	570	1.5	-	-	-	-	-	-
A. versicolor	-	-	-	-	-	-	-	-	-	-	3533	6.9