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# FOOD BORNE FUNGI IN SPARROWS

By

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## INTRODUCTION

In Egypt, sparrows are consumed in some occasions as special fests as food. They are firstly half cooked and grilled in plant oils and saled hot is sandwitsches or in bags. Peple in public squares and districts buy these grilled sparrows and consumption is always on the street as a cheap source of protein instead of grilled poultry. In some districts there are special shops specialled in grilling wild birds as sparrows.

These sparrows are hunted from the costal areas and other provinces as Fayoum.

Nouman et al. (1980) examined a total number of 91 imigrating birds hunted from the north costal area and found that the most common mould genus was Aspergillus (73 from total number of 95) and the most common type of Aspergillus was A. niger (32), other types were A. candidus (47), A. fumigatus (10), A flavus (9), and A. ochraceus, A. nidulans, A. glaucus, A. flavipes and A. terreus were one for each. Other moulds were also isolated as Rhizopus species (12), Penicillium species (5), Mucor species (4), and Absidia (1). They found that the moulds and yeasts were isolated from 91 % of the examined samples.

The present work aimed to examine raw sparrows used for human consumption mycologically and to found the moulds encountered by these birds.

## MATERIAL AND METHODS

### 1. Collection of samples:

A total number of 45 slaughtered defeathered sparrows were collected from different localities, originated from province Elfayoum. Each sparrow was put in a seperate clean polyethylene bag and transported directly to the laboratory for mycological examination.

### 2. Methods:

Each sparrow was subjected to the following examinations:

1- Weighing of each sample by using electronic balance (MFD) by Ohaus Scale corporation Florham park, New Gercy, U.S.A.)

2- Measurement of pH. value using digital pH.meter (Hofmann 1987).

3- Total mould and yeast count (samples taken from muscles & liver) according to the technique recommended by ICMSF (1978), Plating media was acidified Malt extract agar (Oxoid 1982).

4- Isolation and identification of isolates according to Raper and Thom (1949), Domsch et al.,(1980) and Samson et al., (1981).

## RESULTS AND DISCUSSION

From the results recorded in table (1) it is evident that the weight of each sparrow after defeathering (only) ranged from 14.4 g to 20.8 g with mean value of 18.12 g, the pH-value had minimum of 6.03 and maximum of 6.66 with mean value of 6.59. The weight after evasceration and removal of head was nearly 10 g. The mean value of the pH of muscles is somewhat high (6.59) this indicates the exhaustion of the birds during hunting and this leads to rapid spoilage of carcases particularly if not eviscerated.

Table (1): Statistical analytical results of weight and pH of sparrows

| | weight of raw sample(grammes) | pH 24 hours after chilling at 7°C |
|---|---|---|
| Minimum | 14.4 | 6.03 |
| Maximum | 20.8 | 6.66 |
| Mean | 18.12 | 6.59 |
| S.E.M. ± | 4.05 | 1.03 |

Table (2&3) show that 91.1 % of 93.3 % of the samples were positive for moulds and yeasts respectively. The mould count/g ranged from $< 10^2$ to $5x10^5$ with mean number of $2.6x10^4$, yeast count ranged from $< 10^2$ to $8x10^5$ with mean number of $9.4x10^4$.

Table (2): Incidence of moulds and yeasts in the examined raw slaughtered sparrows samples

| No. of examined samples | Isolates | Positive | |
|---|---|---|---|
| | | No. | % |
| 45 | Moulds | 41 | 91.1 |
| 45 | Yeasts | 42 | 93.3 |

Table (3): Statistical analytical results of total mould count and total yeast count/g. of the examined raw slaughtered sparrows samples

| | Moulds | Yeasts |
|---|---|---|
| Minimum | $< 10^2$ | $< 10^2$ |
| Maximum | $5 \times 10^5$ | $8 \times 10^5$ |
| Mean | $2.6x10^4$ | $9.4x10^4$ |
| S.E.M. ± | $3.9x10^3$ | $1.4x10^4$ |

*Food borne fungi in sparrows*

During the present investigation, 298 mould isolates belonging to 9 mould genera were isolated from the examined sparrows used as foods. The most predominant genera were Aspergillus, Fusarium, and Cladosporium (over 86 %) other isolated genera were Penicillium, Verticllium,Geotrichum, Trichoderma, Phoma and Mucor (Table 4).

Table (4): Isolated moulds from the raw slauthered sparrows samples of sparrows

| | Mould | isolated | | Positive samples | |
|---|---|---|---|---|---|
| | | No. | % | No. | % |
| 1 | Aspergillus | 126 | 42.30 | 34 | 75.53 |
| | A. fumigatus | 25 | 8.40 | 16 | 35.55 |
| | A. flavus | 5 | 1.68 | 5 | 11.11 |
| | A. niger | 9 | 3.02 | 8 | 17.77 |
| | A. ochraceus | 7 | 2.35 | 4 | 8.88 |
| | A. roterum | 80 | 26.85 | 1 | 2.22 |
| 2 | Cladosporium | 59 | 19.75 | 28 | 62.22 |
| | C. herbarum | 36 | 12.00 | 16 | 35.55 |
| | C. cladosporioides | 19 | 6.40 | 9 | 20.00 |
| | C. sphaerosperum | 2 | 0.67 | 1 | 2.22 |
| | C. tenuissimum | 1 | 0.34 | 1 | 2.22 |
| | C. macrocarpum | 1 | 0.34 | 1 | 2.22 |
| 3 | Penicillium species | 21 | 7.05 | 12 | 26.66 |
| 4 | Fusarium sporotrichoides | 73 | 24.50 | 6 | 13.33 |
| 5 | Vertcillium species | 5 | 1.70 | 3 | 6.66 |
| 6 | Geotrichum candidum | 3 | 1.00 | 2 | 4.44 |
| 7 | Trichoderma candida | 1 | 0.34 | 1 | 2.22 |
| 8 | Phoma species | 9 | 3.02 | 1 | 2.22 |
| 9 | Mucor plumbus | 1 | 0.34 | 1 | 2.22 |
| | Total | 298 | 100 | | |

Aspergillus constituted 42.30 % of the total isolated moulds, five species of Aspergillus were identified, namely A. roterum (26.85 %), A. fumigatus (8.40 %),

A. niger (3.02 %), A. ochraceus (2.35 %) and A. flavus (1.68 %). Such results agree with that obtained by Nouman et al., (1980) where Aspergillus species was the most isolated mould genus. This mould (Aspergillus) was isolated from 75.50 % of samples. Aspergillus species are incriminated in pulmonary affections (Youssef & Refai 1986). From our observations the defeathering of sparrows is done directly after slaughtering without using hot water, mould spores especially those incriminated in pulmonary affections and skin lesions can infect workers and act as source of environmental contamination.

An interresting point of view is that Fusarium sporotrichoides could be isolated in high percent (24.50%) and from 13.33 % of sampels. This organisms secretes some mycotoxins at low temperatures (Leistner and Eckardt 1981). High incidence of Fusarium may be attributed to its presence mainly on grains which constitute the main source of ration of these free living birds.

From table (4) it is evident also that cladosporium species constituted 19.75 % of the total isolates and isolated from (62.22 %) of sampels, C. herbarium (12 %), C. cladosporioides (6.4 %) C. sphaerospermum (0.67 %), C. tenuissimum (0.34 %) and C. macrocarpum (0.34 %). Cladosporium species (C. herbarum and C. cladosproides) are responsible for the formation of black spot on meats (Mansour, 1986) and on poultry (Bremner, 1977).

Concerning penicillium species, they constituted 7.05 % of the total isolates and were isolated from 26.66 % of the samples. Other moulds as Verticillium, Geotrichum, Trichoderma, Phoma and Mucor were 1.7%, 1 %, 0.34 %, 3.02% and 0.34 % respectively.

As a result of contamination of these sparrows with moulds, they may undergo rapid spoilage and could be incriminated in human chromatomycosis (Rieth, 1973). Moreover high mould count indicates bad hygienic conditions under which these sparrows are prepared and soled. Therefore, more

studies have to be done, educational programmes for worker and salers and even to hunter.

## SUMMARY

A total number of 45 slaughtered sparrows were examined mycologically. MOuds and yeasts could be isoalted from 91.1 % and 93.3 % of the samples respectively. A total number (298) moulds were isolated and identified. Aspergillus, Fusarium and Cladosporium species constitute over 86 % of the total isolates. Other mould genera namely Penicillium, Verticillium,Geotrichum, Trichoderma, Phoma and Mucor constituted nearly 14 %. Public health significance of these moulds was discussed.

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