



## RESEARCH ARTICLE

## Identification of some species of fungi from shrimp

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**Manuscript Info****Manuscript History:**

Received: 15 March 2015  
Final Accepted: 15 April 2015  
Published Online: May 2015

**Key words:****\*Corresponding Author**

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**Abstract**

The study was conducted to investigate the incidence of fungi in the shrimp which was collected from local market in Baghdad city and from Basra governorate and assessed using Sabouraud Dextrose Agar (SDA), for isolation of fungi and confirmation the diagnoses of yeast by fermentation and carbohydrate assimilation. Total of (57) isolates comprising (28) mold and (29) yeast, *Aspergillus* spp. was the most relevant genera which included *Aspergillus flavus* 12(21.42%), *A. fumigatus* 6(10.71%), *A. niger* 4(7.14%), also *Paecilomyces* spp. 2(3.57%), *Cladosporium herborum* 2(3.57%) and *Rhizopus* spp. 2(3.57%). On the other hand, the relevant yeast isolate was *Candida kefyer* 12(21.42%), *C. guillmondii* 4(7.14%), *C. tropicalis* 3(5.35%), *Cryptococcus neoformans* 6(10.71%) and *Saccharomyces cerevisiae* 4(7.14%). The results provide the first report which suggests that most shrimp which was sold in the market may be a source of fungi food poison and intoxication hence are counter productive being responsible for public health hazard.

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**INTRODUCTION**

Shrimp is one of crustacean that is very important, as nutrition protein for both humans and fish. The FAO estimates that half of world sea food demand shrimp will be met by aquaculture in 2010, generally sea food product are very safe to eat if not safer than other meat source, but no food is completely safe and problem do occur (Kurt zweol, 2008). Unfortunately these foods have also been implied in outbreaks of intoxication and intestinal infection produced by microorganism. Different fungus diseases are being discovered in aquaculture of fish industry, increasing the number of fungi affecting shrimp and bivalve culture (Gabriel and Felips, 2000). Facing serious problem due to microbial disease like fungi which cause disease like respiratory problem or reduce in growth of shrimp, this pathogenic fungus like *Fusarium Solani* and *F. incarnatum* may cause lesions in muscles or in gill respectively and cause high mortality ( Kho, *et al.*, 2004). The imported live or frozen shrimp has been lead to transfer and establishment of certain pathogens from one location to the others (Lightner, 1996; Durand *et al.*, 2000; AQUIS, 2000). No article, deals with the presence of fungi in imported sea food have been published in Iraq so this study was designated to isolate and identify fungi from imported frozen shrimp in local market and shrimp from Basra governorate.

**Materials and Methods**

- Collection of samples: 104 shrimp samples were bought from Iraq super market from Baghdad and Basra governorate, the shrimp was frozen and transported in closed-cool plastic buckets to laboratory and processed at same day.
- Cultural method: Each sample was homogenized by stomacher for 3 minute, and take 1ml put in (9) ml of normal saline mixed well, 1ml of mixture was cultured on sabouraud dextrose broth for 1-2 weeks, when growth appeared, it was cultured on the surface of sabouraud dextrose agar containing chloramphenicol (50µm/L). The plates were incubated at 25-30°C until the growth of mold and yeast appeared.

- c) Identification of pathogenic fungi and yeast: the isolated fungi were identified by cultural characteristic and lack to lactophenolcotton blue staining technique. The fungi aseptically transferred into clean glass slide and added one drop of lactophenolcotton blue staining a above mixture and put cover slide. While yeast identified by using biochemical test (sugar fermentation, assimilation and using acid ferric citrate agar for identified *Cryptococcus neoformans* and stained by iodine ink stain. (Barnett *et al.*, 2000; Hoog *et al.*, 2000; Klick *et al.*, 2002).

### Results and Discussion:

Generally seafood products are very safe if not safer than other meat source but no food is completely safe and problem may occur (Kurt Zweol *et al.*, 2008). The present study showed that ( 22) isolate of *Aspergillus* spp. were isolated out of (57) mycotic isolates which characterized as *A. flavus* 12(21.42% ), *A. fumigatus* 6(10.7%), and *A. niger* 4(7.14%), table (1). It was observed in this study that the presence of fungi particularly Alfa toxigenic mold in these shrimp samples was very significant as it was indicated by food safety standard that afla toxigenic mold produce mycotoxins which have pathogenic effect to human, it destroys the liver and kidney resulting to death (Lacaz *et al.*, 2002). Other pathogens which were isolated well-known to man, 3(3.57%) *Cladosporium herborum* which was common indoor and outdoor mold which was found in living and dead plant, this species rarely pathogenic to humans but have been reported to causes infection of skin, toe and nail as well as sinusitis and pulmonary infection (Schoch *et al.*, 2006) and air born spores cause allergen well known trigger for asthmatic attack (Garg *et al.*, 2007; Fairs, 2010). *Paecilomyces* isolated in 3(3.57%) and this mold reported to found in dirty food and dead plant and it does not cause deleterious, health effect in people with compromised immune system (Harish, *et.al.*2011).

Most species isolated in present study have been reported as mycoses agent in human causing otomycosis, keratitis, skin infection, lung infection and even systemic infection these are opportunistic fungi which affect only humans and other animals that have some type of Immune Suppression or immune system compromised (Hoog *et al.*, 2000). *Rhizopus* spp. was isolated in present study in 2(3.57%), while *Saccharomyces cerevisiae* in 4(7.14%), these isolated species in present study was agreement with Olawale *et al.*,(2005) who isolated *Rhizopus* spp. as well as *A. flavus* and *Saccharmyces* spp., while Bankole *et al.*, ( 2005) who recorded the presence of *Saccharomyces* spp., *Rhizopus* spp.and *Aspergillus* spp.

Investigations of isolated yeast from shrimp have indicated the occurrence of various yeast representing (29) isolate including *candida kefyer* 12(21.42), *C. tropicalis* 3(5.35%) *C.gullimodii* 4(7.14%).*Cryptococcus neoformans* 6(10.7%) representative of the genus *Cryptococcus* are worldwide in distribution and it was found in marine environment (Volz *et al.* 1974).

While *Candida tropicalis* was predominate in subtropical Biscayne Bay, and is occur in digestive tract of man and other warm blood animal (Fell and Vanvden, 1963). Uden *et al.*, (1958) suggest that sewage may introduce detectable yeast in polluted water while Enfert and Hube, (2007) refer to *Candida* can cause systemic infection particularly in immune compromised patient, affect over 90,000 person/year in U.S.A with a 40-50% mortality.

In conclusion shrimp in market were heavily contaminated with many fungi species due to unhygienic condition of the environment the poor handling and processing has greatly contributed to contamination of these product which make their consumption hazardous to health.

Table (1)  
Percentage occurrence of fungi in shrimp samples

isolate	number	percentage%
<i>Aspergillus flavus</i>	12	21.42
<i>A. fumigatus</i>	6	10.71
<i>A. niger</i>	4	7.14
<i>Paecilomyces</i> spp.	2	3.57
<i>Cladospoum herborum</i>	2	3.57
<i>Rhizopus</i> spp	2	3.57
<i>Candida kefyer</i>	12	21.42
<i>C. gullimondii</i>	4	7.14
<i>C. tropicalis</i>	3	5.35
<i>Crypto. neoformans</i>	6	10.71
<i>Sacch. cerevisiae</i>	4	7.14
<b>Total</b>	<b>57</b>	<b>100%</b>

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