



Research Paper

Diversity and occurrence of mycoflora associated with dried *Fenneropenaeus indicus* (Prawns) marketed in Jammu, UT of Jammu and Kashmir

Yash Paul Singh

Department of Botany, Government Degree College Samba, University of Jammu, Jammu and Kashmir, India

How to Cite

Singh, Y.P. (2026). Diversity and occurrence of mycoflora associated with dried *Fenneropenaeus indicus* (Prawns) marketed in Jammu, UT of Jammu and Kashmir. *Journal of Fisheries and Zoological Sciences*, 1(3), 1-7. <https://doi.org/10.65385/JFZS0013>

ISSN: 3108-1991 (online)

Article History

Received 30 March 2026

Accepted 25 April 2026

First Online 18 May 2026

Corresponding Author

E-mail: langthjaral@gmail.com

Keywords

Dried prawn
Mycoflora
Seafood Safety
Storage fungi
Jammu

Abstract

The present study was conducted to investigate the diversity and occurrence of mycoflora associated with dried prawns (*Fenneropenaeus indicus*) marketed in Jammu during 2024–2025. A total of 21 fungal species belonging to 13 genera were isolated and identified from samples collected from different markets. The dominant genera recorded were *Aspergillus*, *Fusarium*, *Penicillium*, and *Rhizopus*. Among the identified species, *Aspergillus niger* showed the highest frequency (12.22%), followed by *Aspergillus fumigatus* and *Cladosporium cladosporioides*. Several fungal species including *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus terreus*, *Fusarium moniliforme*, *Fusarium solani*, and *Rhizopus stolonifer* were present throughout the year, indicating their wide distribution in dried prawn samples, while some species showed seasonal variation. The occurrence of potential mycotoxin-producing fungi such as *Aspergillus flavus* and *Fusarium* species suggests a possible risk of mycotoxin contamination in dried seafood products. These findings strongly emphasize the need for improved drying techniques, proper storage under low humidity, hygienic handling during processing and marketing, and the use of appropriate packaging materials to reduce fungal contamination. Regular monitoring of fungal contamination and possible mycotoxin levels by food safety authorities is highly recommended to ensure consumer safety. In addition, awareness and training programs for fish vendors and processors on hygienic handling, proper drying, and safe storage practices should be implemented, while future studies focusing on the detection and quantification of mycotoxin in dried seafood products are essential to better assess potential public health risks.

1. Introduction

Seafood is an important component of the human diet and provides high-quality proteins, essential amino acids, vitamins, and minerals. Among seafood products, dried prawns and other dried fish are widely consumed due to their characteristic flavor, high nutritive value, and longer shelf life. Prawns, particularly *Fenneropenaeus indicus*, are considered nutritionally rich as they contain high levels of protein, omega-3 fatty acids, calcium, phosphorus, iron, vitamin B12, and other micronutrients that contribute to human health and development. Drying is one of the oldest preservation methods used for fish and shellfish because it reduces water activity and slows microbial growth. However, drying alone does not completely prevent microbial contamination, and dried seafood may still be exposed to microorganisms during processing, storage, and marketing (Deng et al., 2021; Navale et al., 2021; Smaoui et al., 2023; Singh et al., 2).

Fungi associated with food commodities are collectively referred to as mycoflora. Several studies have reported that dried fish and shellfish are commonly colonized by fungal genera such as

Aspergillus, *Penicillium*, *Rhizopus*, and *Fusarium*, which are capable of growing even under relatively low moisture conditions. Earlier investigations on dried fish mycoflora reported the predominance of *Aspergillus* species, particularly *Aspergillus niger* and *Aspergillus flavus*, along with *Penicillium* species in dried fish products marketed in tropical regions (Atapattu & Samarajeewa, 1990; Singh et al., 2026). More recent studies have also confirmed the frequent occurrence of fungal genera including *Aspergillus*, *Penicillium*, *Fusarium*, and *Cladosporium* in dried seafood products (Thiyagarajan & Jamal, 2021; Deng et al., 2021; Govindasamy et al., 2022). The presence of these fungi is of particular concern because some species are capable of producing toxic secondary metabolites known as mycotoxins. Important mycotoxins associated with dried seafood include aflatoxins, produced mainly by *Aspergillus flavus* and *Aspergillus parasiticus*; ochratoxin A, produced by certain species of *Aspergillus* and *Penicillium*; and fumonisins and trichothecenes, produced by *Fusarium* species.

These mycotoxin are highly stable compounds that may persist even after food processing and can cause serious health effects including carcinogenic, hepatotoxic, nephrotoxic, and immunosuppressive disorders in humans (Navale et al., 2021; Smaoui et al., 2023; Buatong et al., 2023).

Fungal contamination of dried seafood may occur during drying, storage, transportation, and marketing, especially under conditions of high humidity, temperature fluctuations, and unhygienic handling practices (Buatong et al., 2023). The Union Territory of Jammu and Kashmir has a growing demand for dried seafood products, including dried prawns marketed in Jammu. However, limited information is available on the fungal diversity associated with these products in the region. Therefore, the present study was undertaken to investigate the diversity and occurrence of mycoflora associated with dried *Fenneropenaeus indicus* (prawns) marketed in Jammu. The findings of this study may contribute to a better understanding of fungal contamination in dried seafood and help improve food safety, storage practices, and quality control measures. Adoption of proper hygienic handling, improved drying techniques, and appropriate storage conditions is recommended to minimize fungal contamination and reduce the risk of mycotoxin exposure to consumers.

2. Materials and Methods

2.1 Study Area

The present investigation was conducted to study the mycoflora associated with dried prawns marketed in the markets of Jammu. Jammu is located in the Union Territory of Jammu and Kashmir and experiences distinct seasonal variations including winter, spring, summer, and monsoon, which may influence fungal growth and distribution in dried seafood products.

2.2 Collection of Samples

Dried prawn samples were collected from different local markets of Jammu during the period 2024–2025. Sampling was carried out at monthly intervals to study the seasonal and monthly distribution of fungal species. Approximately 200–250 g of dried prawn samples was collected in sterile polyethylene bags, properly labelled, and transported to the laboratory for mycological analysis. All samples were processed within 24 hours of collection to avoid further microbial changes.

2.3 Isolation of mycoflora

Isolation of fungi from dried prawn samples was carried out using the standard dilution plate technique. Ten grams of dried prawn sample were aseptically transferred into 90 ml of sterile distilled water and homogenized to obtain a stock suspension. Serial dilutions were prepared up to 10^{-3} or 10^{-4} and 1 ml of each dilution was plated on sterilized culture media using the pour plate method.

2.4 Culture Media and Incubation

Fungi were isolated using Potato Dextrose Agar (PDA) medium supplemented with streptomycin (50 mg/L) to inhibit bacterial growth. The inoculated plates were incubated at $25 \pm 2^\circ\text{C}$ for 7 days under laboratory conditions. After incubation, fungal colonies appearing on the plates were counted and sub-cultured to obtain pure cultures.

2.5 Identification of fungal isolates

The isolated fungi were identified based on colony morphology, cultural characteristics, and microscopic features such as conidiophores, conidia, and spore arrangement. Identification was carried out using standard taxonomic keys and manuals, including Illustrated Genera of Imperfect Fungi and Fungi and Food Spoilage (Barnett & Hunter, 1998; Pitt & Hocking, 2009). Additional identification references and monographs such as those by Raper & Fennell (1965), Barron (1972), Ellis (1971), Gilman (2001), Sutton (1980), Barnett & Hunter (1998), and Samson et al. (2014) were also consulted for accurate identification of fungal species.

2.6.2.6. Statistical Analysis

All observations were recorded and expressed as mean colony counts $\pm$ standard deviation (Mean $\pm$ SD). The percentage frequency and occurrence of fungal species were calculated to determine their relative abundance in dried prawn samples collected from different markets of Jammu.

The percentage frequency of each fungal species was calculated using the following formula:

Percentage Frequency= ("Number of isolates of a species" / "Total number of fungal isolates") $\times$ 100

The percentage occurrence of fungal species was calculated using the following formula:

Percentage Occurrence= ("Number of samples in which a species occurred" / "Total number of samples examined") $\times$ 100

Statistical calculations including mean and standard deviation were performed using Microsoft Excel, and the obtained results were used to evaluate the distribution and dominance of fungal species associated with dried prawn samples

3. Results

3.1.3.1 Seasonal and Monthly Distribution of Fungal Species

The seasonal and monthly distribution of fungal species associated with dried prawns marketed in Jammu during 2024–2025 is shown in Table 1. A total of 21 fungal species belonging to different genera were recorded.

Table 1: Seasonal distribution and monthly occurrence of fungal species isolated from dried prawns marketed in Jammu.

Sr .No	fungal species	winter			spring		summer		monsoon			autumn	
		Dec	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov
1	<i>Alternaria alternata</i>	+	+	+	+	+	+	+	+	+	+	+	+
2	<i>Aspergillus flavus</i>	+	+	+	+	+	+	+	+	+	+	+	+
3	<i>Aspergillus fumigatus</i>	+	+	+	+	+	+	+	+	+	+	+	+
4	<i>Aspergillus niger</i>	+	+	+	+	+	+	+	+	+	+	+	+
5	<i>Aspergillus sydowii</i>	+	-	+	-	-	+	+	-	-	-	+	+
6	<i>Aspergillus terreus</i>	+	+	+	+	+	+	+	+	+	+	+	+
7	<i>Cladosporium cladosporioides</i>	+	+	+	+	+	+	+	+	+	+	+	+
8	<i>Curvularia lunata</i>	+	-	+	+	-	-	+	-	-	-	-	+
9	<i>Epicoccum nigrum</i>	+	-	-	+	+	+	+	-	-	-	-	-
10	<i>Fusarium moniliforme</i>	+	+	+	+	+	+	+	+	+	+	+	+
11	<i>Fusarium solani</i>	+	+	+	+	+	+	+	+	+	+	+	+
12	<i>Fusarium sporotrichioides</i>	+	+	+	+	+	+	+	+	+	+	+	+
13	<i>Geotrichum candidum</i>	+	+	+	+	+	+	+	+	+	+	+	+
14	<i>Mucor mucedo</i>	+	+	+	+	+	+	+	+	+	+	+	+
15	<i>Penicillium chrysogenum</i>	+	+	+	+	+	+	+	+	+	+	+	+
16	<i>Penicillium citrinum</i>	+	+	-	-	+	-	-	-	-	-	+	+
17	<i>Penicillium purpurogenum</i>	+	+	-	-	-	-	-	-	+	+	-	-
18	<i>Rhizopus stolonifera</i>	+	+	+	+	+	+	+	+	+	+	+	+
19	<i>Trichoderma viride</i>	+	+	-	-	-	-	+	-	-	-	-	-
20	<i>Trichothecium roseum</i>	+	+	+	+	+	+	+	+	+	+	+	+
21	<i>Verticillium spp.</i>	+	+	-	-	+	-	-	-	-	-	-	-

Table 2: Distribution of fungal genera isolated from dried prawn samples

Sr. No	Fungal Genus	Number of Species	Percentage Occurrence (%)
1	<i>Alternaria</i>	1	4.8
2	<i>Aspergillus</i>	5	23.8
3	<i>Cladosporium</i>	1	4.8
4	<i>Curvularia</i>	1	4.8
5	<i>Epicocum</i>	1	4.8
6	<i>Fusarium</i>	3	14.3
7	<i>Geotrichum</i>	1	4.8
8	<i>Mucor</i>	1	4.8
9	<i>Penicillium</i>	3	14.3
10	<i>Rhizopus</i>	1	4.8
11	<i>Trichoderma</i>	1	4.8
12	<i>Trichothecium</i>	1	4.8
13	<i>Verticillium</i>	1	4.8

Table 3: Taxonomic classification, number of isolates and percentage frequency of fungal species isolated from dried prawns marketed in Jammu

S.No	Fungal Species Identified	Old Class (Traditional)	Modern Class	No. of isolates	% Frequency
1	<i>Alternaria alternata</i>	Deuteromycetes	Dothideomycetes	42	4.67
2	<i>Aspergillus flavus</i>	Deuteromycetes	Eurotiomycetes	78	8.67
3	<i>Aspergillus fumigatus</i>	Deuteromycetes	Eurotiomycetes	108	12
4	<i>Aspergillus niger</i>	Deuteromycetes	Eurotiomycetes	110	12.22
5	<i>Aspergillus sydowii</i>	Deuteromycetes	Eurotiomycetes	10	1.11
6	<i>Aspergillus terreus</i>	Deuteromycetes	Eurotiomycetes	82	9.11
7	<i>Cladosporium cladosporioides</i>	Deuteromycetes	Dothideomycetes	107	11.89
8	<i>Curvularia lunata</i>	Deuteromycetes	Dothideomycetes	16	1.78
9	<i>Epicoccum nigrum</i>	Deuteromycetes	Dothideomycetes	12	1.33
10	<i>Fusarium moniliforme</i>	Deuteromycetes	Sordariomycetes	73	8.11
11	<i>Fusarium solani</i>	Deuteromycetes	Sordariomycetes	57	6.33
12	<i>Fusarium sporotrichioides</i>	Deuteromycetes	Sordariomycetes	66	7.33
13	<i>Geotrichum candidum</i>	Deuteromycetes	Saccharomycetes	37	4.11
14	<i>Mucor mucedo</i>	Zygomycetes	Mucoromycetes	97	10.78
15	<i>Penicillium chrysogenum</i>	Deuteromycetes	Eurotiomycetes	102	11.33
16	<i>Penicillium citrinum</i>	Deuteromycetes	Eurotiomycetes	14	1.56
17	<i>Penicillium purpurogenum</i>	Deuteromycetes	Eurotiomycetes	6	0.67
18	<i>Rhizopus stolonifera</i>	Zygomycetes	Mucoromycetes	85	9.44
19	<i>Trichoderma viride</i>	Deuteromycetes	Sordariomycetes	4	0.44
20	<i>Trichothecium roseum</i>	Deuteromycetes	Sordariomycetes	50	5.56
21	<i>Verticillium spp.</i>	Deuteromycetes	Sordariomycetes	8	0.89

Percent frequency was calculated based on the total number of fungal isolates recovered from dried prawn samples (Total isolates = 900)

Table 4: Occurrence of fungal species isolated from dried prawns marketed in Jammu, Jammu and Kashmir during 2024–2025 (Mean $\pm$ SD)

S.No	Fungal species	Mean $\pm$ SD	Occurrence (%)
1	<i>Alternaria alternata</i>	3.50 $\pm$ 1.51	100
2	<i>Aspergillus flavus</i>	6.50 $\pm$ 3.40	100
3	<i>Aspergillus fumigatus</i>	9.00 $\pm$ 6.59	100
4	<i>Aspergillus niger</i>	9.17 $\pm$ 5.59	100
5	<i>Aspergillus sydowii</i>	0.83 $\pm$ 1.19	58.33
6	<i>Aspergillus terreus</i>	6.83 $\pm$ 2.86	100
7	<i>Cladosporium cladosporioides</i>	8.92 $\pm$ 3.94	100
8	<i>Curvularia lunata</i>	1.33 $\pm$ 2.10	41.67
9	<i>Epicoccum nigrum</i>	1.00 $\pm$ 1.48	41.67
10	<i>Fusarium moniliforme</i>	6.08 $\pm$ 3.20	100
11	<i>Fusarium solani</i>	4.75 $\pm$ 3.49	100
12	<i>Fusarium sporotrichioides</i>	5.50 $\pm$ 3.71	100
13	<i>Geotrichum candidum</i>	3.08 $\pm$ 1.83	100
14	<i>Mucor mucedo</i>	8.08 $\pm$ 3.48	100
15	<i>Penicillium chrysogenum</i>	8.50 $\pm$ 3.94	100
16	<i>Penicillium citrinum</i>	1.17 $\pm$ 2.55	41.67
17	<i>Penicillium purpurogenum</i>	0.50 $\pm$ 0.80	33.33
18	<i>Rhizopus stolonifera</i>	7.08 $\pm$ 3.53	100
19	<i>Trichoderma viride</i>	0.33 $\pm$ 0.65	25
20	<i>Trichothecium roseum</i>	4.17 $\pm$ 1.95	100
21	<i>Verticillium spp.</i>	0.67 $\pm$ 1.30	25

Several species, including *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus terreus*, *Cladosporium cladosporioides*, *Fusarium moniliforme*, *Fusarium solani*, *Fusarium sporotrichioides*, *Geotrichum candidum*, *Mucor mucedo*, *Penicillium chrysogenum*, *Rhizopus stolonifer*, and *Trichothecium roseum*, were present throughout the year, indicating their common occurrence in dried prawn samples. Some species showed seasonal variation. *Aspergillus sydowii* appeared intermittently, while *Curvularia lunata* and *Epicoccum nigrum* were mainly recorded during winter and spring. Similarly, *Penicillium citrinum* and *Penicillium purpurogenum* showed irregular distribution, being absent during several months. *Trichoderma viride* and *Verticillium spp.* were recorded only in a few months, indicating limited occurrence.

Overall, dominant genera such as *Aspergillus*, *Fusarium*, *Penicillium*, and *Rhizopus* showed wide seasonal distribution, suggesting their strong adaptability to the storage conditions of dried prawns.

3.2 Distribution of Fungal Genera

The distribution of fungal genera isolated from dried prawn samples marketed in Jammu is presented in Table 2. A total of 13 fungal genera comprising 21 species were recorded during the investigation. Among these, *Aspergillus* was the most dominant genus with five species (23.8%), followed by *Fusarium* and *Penicillium*, each represented by three species (14.3%). These genera are commonly reported as storage fungi associated with dried food products.

Other genera such as *Alternaria*, *Cladosporium*, *Curvularia*, *Epicoccum*, *Geotrichum*, *Mucor*, *Rhizopus*, *Trichoderma*, *Trichothecium*, and *Verticillium* were represented by one species each (4.8%). Overall, the results indicate that *Aspergillus*, *Fusarium*, and *Penicillium* dominated the mycoflora of dried prawns in the study area.

3.3 Taxonomic Classification and Frequency of Fungal Species

The taxonomic classification, number of isolates, and percentage frequency of fungal species isolated from dried prawns marketed in Jammu are presented in Table 3. A total of 21 fungal species comprising 900 isolates were recorded during the study. Most species belonged to Deuteromycetes, while *Mucor mucedo* and *Rhizopus stolonifer* belonged to Zygomycetes.

Among the identified fungi, *Aspergillus niger* showed the highest frequency (12.22%), followed by *Aspergillus fumigatus* (12.0%) and *Cladosporium cladosporioides* (11.89%). Other predominant species included *Penicillium chrysogenum* (11.33%), *Mucor mucedo* (10.78%), *Rhizopus stolonifer* (9.44%), and *Aspergillus terreus* (9.11%). Moderate frequencies were observed for *Aspergillus flavus* and species of *Fusarium*, whereas

Curvularia lunata, *Epicoccum nigrum*, and *Penicillium citrinum* showed lower frequencies.

Overall, the results indicate that species of *Aspergillus*, *Penicillium*, *Fusarium*, and *Rhizopus* dominated the mycoflora associated with dried prawns in the study area.

3.4 Occurrence of Fungal Species

The occurrence of fungal species isolated from dried prawns marketed in Jammu during 2024–2025 is presented in Table 4. A total of 21 fungal species were recorded with varying mean colony counts and percentage occurrence. Several species, including *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus terreus*, *Cladosporium cladosporioides*, *Fusarium moniliforme*, *Fusarium solani*, *Fusarium sporotrichioides*, *Geotrichum candidum*, *Mucor mucedo*, *Penicillium chrysogenum*, *Rhizopus stolonifer*, and *Trichothecium roseum*, showed 100% occurrence, indicating their presence in all analysed samples.

Among the species, *Aspergillus niger* showed the highest mean colony count, followed by *Aspergillus fumigatus*, *Cladosporium cladosporioides*, *Penicillium chrysogenum*, and *Mucor mucedo*. Lower occurrence was recorded for *Aspergillus sydowii*, *Curvularia lunata*, *Epicoccum nigrum*, and *Penicillium citrinum*, while *Penicillium purpurogenum*, *Trichoderma viride*, and *Verticillium spp.* showed the least occurrence. Overall, species of *Aspergillus*, *Penicillium*, *Fusarium*, *Rhizopus*, and *Cladosporium* dominated the mycoflora of dried prawns, indicating their adaptability to prevailing storage and environmental conditions.

4. Discussion

4.1. Diversity of Fungal Species

The present investigation revealed a diverse assemblage of fungal species associated with dried prawns marketed in Jammu. A total of 21 fungal species belonging to several genera were isolated during the study period, indicating that dried prawn products provide favourable conditions for fungal colonization. The predominance of fungal genera such as *Aspergillus*, *Penicillium*, *Fusarium*, and *Rhizopus* agrees with earlier reports on the mycoflora of dried fish and seafood products, where these genera dominate due to their ability to grow under conditions of low moisture and high salt concentration (Atapattu & Samarajeewa, 1990; Deng et al., 2021).

4.2. Dominant Fungal Species

Among the fungal species identified, *Aspergillus niger* and *Aspergillus fumigatus* showed the highest frequency and abundance. Similar observations have been reported in earlier investigations where *A. niger* was identified as one of the most common fungi associated with dried fish products (Atapattu & Samarajeewa,

1990). The predominance of *Aspergillus*, *Fusarium*, and *Penicillium* species has also been reported in dried seafood samples from seafood markets in China (Deng et al., 2021), suggesting their strong adaptability to storage conditions of dried fishery products.

4.3. Seasonal Variation in Fungal Occurrence

Seasonal variation in fungal occurrence was also observed in the present study, with certain species appearing only during specific seasons, while others were present throughout the year. Similar seasonal patterns in fungal growth have been reported in dried fish products, where environmental factors such as temperature, humidity, and moisture content influence fungal proliferation (Chakrabarti & Varma, 1999).

4.4. Storage Fungi and Mycotoxin Risk

The presence of storage fungi such as *Mucor mucedo* and *Rhizopus stolonifer* indicates that post-harvest handling, drying, and storage conditions may contribute to fungal contamination. In addition, the occurrence of potential mycotoxin-producing fungi such as *Aspergillus flavus* and *Fusarium* species suggests the possible risk of mycotoxin contamination in dried seafood products. These fungi are known producers of toxic metabolites including aflatoxins, fumonisins, trichothecenes, and zearalenone, which may pose serious health hazards to consumers (Bennett and Klich, 2003; Marin et al., 2013; Ismaiel and Papenbrock, 2015). Recent studies have also emphasized that fungal contamination of dried seafood can lead to accumulation of mycotoxins and threaten food safety (Buatong et al., 2023).

4.5. Implications for Food Safety

Overall, the findings indicate that dried prawns marketed in Jammu harbor diverse fungal species influenced by environmental conditions and storage practices. These results highlight the importance of proper drying, hygienic handling, and improved storage conditions to minimize fungal contamination and ensure the safety and quality of dried seafood products.

5. Conclusion

The present investigation revealed a considerable diversity of fungal species associated with dried prawns marketed in Jammu. A total of 21 fungal species belonging to 13 genera were recorded, with *Aspergillus*, *Penicillium*, *Fusarium*, and *Rhizopus* as the dominant genera. Several species occurred throughout the year, while others showed seasonal variation. The presence of potential mycotoxin-producing fungi such as *Aspergillus flavus* and *Fusarium* species indicates a possible risk of mycotoxin contamination in dried seafood products. These findings suggest that environmental factors, storage conditions, and market handling significantly influence fungal contamination. Therefore, adoption of improved drying techniques,

hygienic handling practices, and proper storage facilities with controlled humidity is strongly recommended to reduce fungal growth. Regular monitoring of fungal contamination and mycotoxin levels by food safety authorities, along with awareness programs for vendors on safe handling and storage practices, is essential to ensure the safety and quality of dried seafood products. Further research on detection and quantification of mycotoxins in dried seafood is also recommended to assess potential health risks to consumers.

6. Statements and Declarations

Ethical Approval: This study did not involve live animal experimentation or human participants. Dried prawn samples were procured from retail markets for microbiological analysis. Therefore, formal ethical approval from an institutional animal ethics committee was not required.

Conflict of Interest: No conflict of interest was reported by the authors.

Funding statement: Not applicable

Acknowledgements: The authors gratefully acknowledge the support of the Department of Botany, Government Degree College Samba for providing the necessary laboratory facilities to carry out this research work. The authors are also thankful to the Research Scholar of the Department of Zoology, University of Jammu, for assistance in the identification of prawn species used in the study. Special thanks are extended to the local market shopkeepers for their cooperation and for providing the dried prawn samples required for this investigation.

References

- Atapattu, R., Samarajeewa, U. 1990. Fungi associated with dried fish in Sri Lanka. *Mycopathologia*, 111, 55–59. DOI: <https://doi.org/10.1007/BF00436603>
- Barnett, H. L., Hunter, B. B. 1998. *Illustrated genera of imperfect fungi* (4th ed.). St. Paul, Minnesota, USA: APS Press.
- Barron GL. 1968. *The Genera of Hyphomycetes from Soil*. Baltimore: Williams & Wilkins
- Bennett, J. W., Klich, M. 2003. Mycotoxins. *Clinical Microbiology Reviews*, 16(3), 497–516.
- Buatong, J., Preedanon, S., Mittal, A., Palamae, S., Benjakul, S. 2023. Contaminated fungi in dried salted fishes: Isolation, identification and inhibition. *Journal of Food Science*, 88(11), 4653–4663. DOI: <https://doi.org/10.1111/1750-3841.16749>
- Chakrabarti, R., Varma, P. R. G. 1999. Halotolerant fungi in salted and dried fish at the lower Visakhapatnam coast. *Fishery Technology*, 36(1). DOI not available (older journal article).
- Deng, Y., Wang, Y., Deng, Q., Sun, L., Wang, R., Ye, L., Tao, S. 2021. Fungal diversity and mycotoxin contamination in dried fish products in Zhanjiang market, China. *Food Control*, 121, 107614. DOI: <https://doi.org/10.1016/j.foodcont.2020.107614>
- DOI: <https://doi.org/10.1007/978-0-387-92207-2>
- DOI: <https://doi.org/10.1128/CMR.16.3.497-516.2003>

- Ellis MB. 1971. Dematiaceous Hyphomycetes. Kew (UK): Commonwealth Mycological Institute
- Exploring fungal diversity in shrimp aquaculture: One health approach for addressing food safety and human health concerns. Journal of Taibah University for Science.
- Gilman JC. 2001. A Manual of Soil Fungi. 2nd ed. Delhi: Biotech Books
- Govindasamy, T., Bhassu, S., Rajub, C. S., Velayuthan, R. D. 2025.
<https://doi.org/10.1080/16583655.2025.2579337>
- Ismail, A. A., Papenbrock, J. 2015. Mycotoxins: Producing fungi and mechanisms of phytotoxicity. Agriculture, 5(3), 492–537. DOI: <https://doi.org/10.3390/agriculture5030492>
- Marin, S., Ramos, A. J., Cano-Sancho, G., Sanchis, V. 2013. Mycotoxins: Occurrence, toxicology and exposure assessment. Food and Chemical Toxicology, 60, 218–237. DOI: <https://doi.org/10.1016/j.fct.2013.07.047>
- Navale, V., Vamkudoth, K., Ajmera, S., Dhuri, V. 2021. Aspergillus derived mycotoxins in food and the environment: Prevalence, detection, and toxicity. Toxicology Reports, 8, 1008–1030. <https://doi.org/10.1016/j.toxrep.2021.04.013>
- Pitt, J. I., Hocking, A. D. 2009. Fungi and Food Spoilage (3rd ed.). Springer, New York.
- Raper KB, Fennell DI. 1965. The Genus Aspergillus. Baltimore: Williams & Wilkins
- Samson, R. A., Visagie, C. M., Houbraken, J., Hong, S.-B., Hubka, V., Klaassen, C. H. W., Perrone, G., Seifert, K. A., Susca, A., Tanney, J. B., Varga, J., Kocsubé, S., Szigeti, G., Yaguchi, T., & Frisvad, J. C. 2014. Phylogeny, identification and nomenclature of the genus Aspergillus. Studies in Mycology, 78, 141–173. DOI: <https://doi.org/10.1016/j.simyco.2014.07.004>
- Singh, Y P., Devi, G., Joyti, MK. 2026. Mycoflora associated with dried Labeo rohita marketed in Jammu, Union Territory of Jammu and Kashmir, India. Journal of Fisheries and Zoological Sciences, 1(2), 29-35. DOI: <https://doi.org/10.65385/JFZS0005>
- Singh, Y.P., Devi, G., and Jyoti, M.K. (2026). Mycoflora associated with dried Labeo rohita marketed in Jammu, Union Territory of Jammu and Kashmir, India. Journal of Fisheries and Zoological Sciences, 1(2), 29-35. <https://doi.org/10.65385/JFZS0005>
- Smaoui, S., D'Amore, T., Agriopoulou, S., Mousavi Khaneghah, A. 2023. Mycotoxins in seafood: Occurrence, recent development of analytical techniques and future challenges. Separations, 10(3), 217. <https://doi.org/10.3390/separations10030217>
- Sutton BC. 1980. The Coelomycetes. Kew (UK): Commonwealth Mycological Instit
- Thiyagarajan, S., Jamal, A. 2021. Mycological analysis of dried fishes collected from open markets with special focus on mycotoxin production. Journal of Microbiology, Biotechnology and Food Sciences, 10(6), e2236. DOI: <https://doi.org/10.15414/jmbfs.2236>