

CHARACTERIZATION OF FUNGAL MICROBIOTA ON RICE GRAINS FROM LOCAL MARKETS OF LAHORE

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Abstract

Pakistan is among the major rice producing countries, and more than half of the Pakistani rice produce is exported to different parts of the world. The pre and post-harvest environmental conditions of rice crop in Pakistan promote the growth of fungi in field as well as in stored rice grains. The end products have always been the main focus of food safety and quality. This study deals with the characterization of fungal microbiota on rice grains being sold in local markets of Lahore city in Pakistan.

Rice grain samples were collected from local markets, and fungal species were isolated and purified through continuous enrichment culture. Conventional morphological and physiological tests were performed to identify the mycoflora on rice grains. Phylogenetic analysis of the isolates was performed amplifying Internal Transcribed Spacer (ITS) regions.

Analysis of total mycoflora revealed the heavy load (4.33×10^5) of fungal contamination on rice grains. Most of the species were characterized as *Aspergillus flavus*, *Penicillium* spp., *Aspergillus fumigates*, *Alternaria* spp., *Aspergillus niger* and *Fusarium* spp. in this study.

Improper packaging, poor ventilation and increased humidity in the ware houses showed considerable effect on the presence of contaminating fungi in stored rice grains. Prevalence of mycotoxins producing species indicates the serious food safety threat to the consumers. This study will help to devise the strategies to control the fungal contamination in rice grains, ensuring food safety.

Key words: Rice grains, Food safety, Mycotoxins, Pakistan.