ISSN: 2394 5303 | Impact Factor 4.002(UIF) | Printing Area International Research Journal | November 2016 Issue-23, Vol-01 | 0100

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ISOLATION OF FUNGI FROM BLACK SOIL PADDY FIELDS OF SARGAON AREA OF CHHATTISGARH

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ABSTRACT

Studies on the population of fungal species prevailing in paddy fields of Sargaon area (C.G.) was done during the period from October 2015 to March 2016. The field under study contained black soil in which mono-cropping (growing single crop of paddy in a year) is practised. The result thus obtained, indicated greater variation in the prevalence of fungal species in the time interval from October to march. Altogether, 13 species of fungi viz; Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus, Aspergillus terreus, Aspergillus nidulans, Fusarium solani, Penicillium frequetans, Penicillium chrysogenum, Fusarium oxisporum, Rhizopus stolonifer, Trichoderma viridae, Curvularia lunata, Curvularia clavata were isolated during present investigation. Among them Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus, Penicillium frequetans, and Rhizopus stolonifer were found in all the six months of study. As far the relative distribution of fungal species was concerned Aspergillus niger and Aspergillus flavus were found to have highest value of density in terms of their colony forming units (CFUs)

KEY WORDS: Fungi, Black Soil, Prevalence, Relative Distribution, Colony Forming Units (CFUs).

INTRODUCTION

Fungi constitute ubiquitous groups ganisms as these are found every where environment. A vast number of microbial including fungi is found associated with types of soil. These are not static rather dynamic role. In fact, the fungal flora are important component of biodiversity and esse tial for the survival of other organisms on ear These are crucial for global ecological pr cesses (Hawksworth, 2002). A major role played by fungi in soil ecosystem as these ar decomposers of organic residue present in (Carlite et al., 2001).

No doubt, crop plants absorb their m eral nutrients available in soluble form whic is part of inorganic component of soil. But thes minerals are solubilized either from complex organic rock particles or organic residues by th action of decomposer which are mainly fun or bacteria. Fungi are fundamental for soil ec system functioning specially in agricultural so as they play key role in many essential pro cesses such as organic matter decompositio and elemental release by mineralizatio (Christensen, 1989; Rangaswami and Bagyar 1998). Recycling of nutrients are further reg lated by biological activity in soil which largely affected by soil mycoflora (Arunachalam et al., 1997). The population of fungi is also affected by the content and type of organic and inorganic materials present in soil. In moder agriculture, larger quantity of chemical fertil ers and wide range of pesticides/ fungicide are being used. These play adverse role on th mycoflora which are quite useful for maintai ing the soil fertility and ecobalance in the so atmosphere (Carroll and Wicklow, 1992 Marschner et al., 2003; Ayanshina and Ob 2006). Accumulation of agrochemicals to toxi level in soil and water bodies is harmful not only for microorganisms but also for plants wildlife and man (Amakiri, 1982). The kind of fungi and their density depend on the type of

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Evaluation of Nutritional Loss in some North Indian Fast food Due to Fungal Infestation

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ABSTRACT

The saprophytic association of microbes on organic materials constitute an important mode of microbial nutrition. Food materials being rich in organic and inorganic nutrients favour the growth of a number of microbes if there is sufficient moisture. During present investigation, the mycoflora of ready-made Dahibada and Panipuri and their effect on the nutritional quality of the fast food items were studied. The experimental results revealed the presence of 07 (Aspergillus niger, A. flavus, Penicillium sp., Rhizopus sp., Trichoderma sp., Chaetomium sp. and Alternaria sp.) and 10 (Aspergillus niger, A. flaves, A. fumigatus, Penicillium sp. Rhizopus sp., Nigrospora sp., Trichoderma sp., Phoma sp., Chaetomium sp. and Alternaria sp.) fungal species, respectively in dahibada and panipuri. Fungi were isolated on czapec-dox agar medium supplemented with casein hydrolysate, yeast extract and vitamin mixture containing biotin, p-aminobenzoic acid, riboflavin, pyrodoxin hydrochloride and nicotinamide. Biochemical analysis of the contaminated food material also revealed that fungi infesting on the food materials cause severe nutritional deterioration specially in terms of starch and protein value. A decrease of 15% and 12% in starch content were noticed in Dahibada and Panipuri samples after 72 hours of their preparation. In case of protein, the decrease was almost 10% and 13%, respectively in the two fast food items.

Key words : Mycoflora, North Indian fast-food, Nutritional deterioration, Czapec-dox agar medium, Dahibada and Panipuri.

INTRODUCTION

Ready-made and cooked food materials support the growth of a number of microbes including bacteria and fungi due to high level of moisture and nutritional quality. The level of microbial contamination is a factor for deciding whether the food is consumable (Singh et al., 2011., Kabir et al., 2011). A number of food materials are sold on open hand-carts on road-sides of almost all Indian cities and suburbs in a very much unhygenic condition. The matter of microbial food contamination is of prime importance for such a ready-made cooked food items because the people consuming them generally belong to low socio-economic and educational background. Either they do not understand the hazards of food contamination or they are ignorant of the facts about general hygine. It often results into severe ailments to consumers (Ayanbimpe et al., 2007., Singh et al., 2011)

Fungi easily contaminate our food because their propagules are available in all spheres of the earth surface (Sonia et al., 2011). Many fungal species have been isolated from various food materials like rice, wheat flour and corn meal (Mislivec et al., 1979), black and red peppers (Sharfun Nahar et al., 2004), various condiments (Hashmi and Thrane, 1990), cooked food items like Chat and Samosa (Singh et al., 2011) and bread and boiled rice (Tabassum et