

Original Article

Incidence Of Indoor Bacteria For Food Storage House

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*Microorganism which is including fungi, algae, bacteria virus and organic dust present in air can cause several allergic infections. To study was conducted in 5 different as of indoor food storage house in Bholad to analyze the composition and intensity of bacteria using petri-plate method. Bacteria are present in order 1.8×10^2 to 5.3×10^6 . Bacteria identified in there are the most dominating species are, *Bacillus Pseudomonas* and *Staphylococcus*. The present study investigates the incidence and diversity of airborne bacteria in food storage houses located in Bhalod, District Jalgaon (M.S.). Air samples were collected from five different storage facilities during rainy and winter seasons using the Petri-plate exposure method. A total of four dominant bacterial species were identified: *Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus lactis*, and *Pseudomonas spp.* The results revealed higher bacterial concentrations during the rainy season, with *Bacillus subtilis* (55–85%) and *Staphylococcus aureus* (56–59%) being most prevalent. Seasonal variations indicated that microbial load and spore concentration were relatively higher in the winter months. These airborne microorganisms, particularly endotoxin-producing species, pose potential occupational health risks, including respiratory impairments and allergic responses, to workers exposed to grain dust. The findings highlight the importance of regular microbial monitoring in food storage environments to minimize health hazards and ensure safe grain storage practices.*

Keyword- Bacteria, air indoor store house, season, bhalod

Introduction-

There are several food storage houses in around Bhalod for storing food grains for months. A large quantity of dust is generated in storage grain house therefore causing a potential health risk to workers due to inhalation of grain dust. Bacteria produce endotoxin in which can cause allergies to the farm workers (Williams et al., 1964). Which can earlier reports, mostly from abroad revealed that grain dust exposure caused both acute chronic respiratory impairments (Chan-Yeung et al., 1979). It was also reported the grain dust fever and asthma are very much common amongst the workers exposed to grain dust (Dvorackova 1976)

Material and Method

Sampling of air was performed from Rainy and Winter season in different pulses, cereals and other grains food storage house located at the Bhalod, District- Jalgaon.

Air Sampling.

The air sample was taken by the use of Petri-plate method. Two samples were collected from one day per months. Plates were exposed to air 10 minute so that the air borne micro flora can be trapped. The Petri plates were placed at 0 ft. to 7 ft. height above the ground.

Microbiological Examination of the Air:

Petri plates containing rose Bengal chloramphenicol agar were exposed to air to trap any spore that falls into them. After exposing the open petri plate for 10 min. the plates were closed and incubated at 25 °C for 5 days. For isolation bacteria nutrient agar plates were exposed to air from 3 to 5 minutes and incubated at 37 °C for the bacteria are were collected.



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Bacteria isolated were identified based on the morphological character like colony, colour texture followed by biochemical tests according to the standard protocols

Table 1: Bacterial Species of Percentage

Bacterial Species	Rainy Season					Winter season				
	1	2	3	4	5	1	2	3	4	5
Bacillus subtilis	82	63	30	80	81	72	85	44	69	46
Staphylococcus aureus	56	31	24	54	56	29	70	43	45	37
Streptococcus lactis	14	06	21	15	17	-	26	65	11	05
Pseudomouns species	51	16	34	52	58	28	33	31	43	32

Table 2: Bacterial Identification

Sr. No	Test	Bacillus subtilis	Staphylococcus species	Streptococcus species	Pseudomouns species
1	Gram Staining	Rod, G +	Coccus G +	Coccus G +	Rod, G -
2	Culture Characteristics	Abundant Opaque white waxy	Abundant Opaque Golden growth	Thin even growth	Abundant thin white, medium turns green
3	Starch Hydrolysis	+	-	-	-
4	Lipid Hydrolysis	+	-	-	+
5	Litmus milk test	Peptonization	Acid reduction	Acid rapid reduction	Rapid Peptonization

Result and Discussion

During the 6 months research work 4 bacterial species were recorded in 5 different food storage house of Bhalod. The bacteria were high during rainy season (Table 1 and 2). Bacteria like *Bacillus subtilis* varied from 55% to 85% and *Staphylococcus aureus* 56% to 59% were high during rainy season. The percentage of *Pseudomonas* species and *Streptococcus species lactis* were shown in (table 1).

The different spore concentration of air borne microorganism inside the air were higher in winter season compared to rainy season. Our study also reported as higher presence of microorganisms in winter season (Chatopadhyay et al., 2007). Bacterial spore concentration in different food grain house were in rainy and winter season. On an average bacteria like *Pseudomonas* species were in the air which produced endotoxin which were considered as potential agent of occupational disease (Ewa et al., 2005). In present study the bacteria were present in all sampling potential risk of allergies.

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