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Significant Rise in Growth of Pleurotus Ostreatus on Substrates Deriving from Different Agriculture & House Hold Waste Leads to Environment Cleanups

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Abstract

Indian economy mainly depends on the agriculture sector. At the time of independence, this sector contributed about 52% of Gross Domestic product (GDP) and employed over three-fourth of total work force in the country. In 1961, there were 31.5 million agricultural labourers in India, which accounts for around one-fourth of the agricultural work force. Some of the small and marginal landholders engaged as labourers, but these minute holdings cannot afford even bare subsistence for a family. These landholders' major part of the income is derived from working on others farmer's field. In this sense, these landholders are labourers. A large group of landless labourers belongs to the poorest and most depressed sections of society . Mostly the landless agricultural labour groups such as the Malas and Madigas are generally employed in the fields of the dominant 'ryots' as farm servants and seasonal labourers. Even though Coastal Andhra has irrigation facilities to a large extent and agricultural development is of the higher order in the region, the proportion of the agricultural labourers to the total agricultural workers has increased remarkably after the Green Revolution due to various technological advancements in the agrarian sector. Numerous agricultural labourers got displaced from the agricultural sector in rural areas due to agrarian transformation and mechanization during the green revolution period of post-independence era.

Keywords

Bioremediation, Growth promotion test, Pleurotus Ostreatus, Pour plate method.

INTRODUCTION

Mushrooms are considered as a functional food, which can provide health benefits beyond the traditional nutrients they contains And also the substrate used for the harvesting of the *Pleurotus* mushroom is valuable as a fertilizer and a soil conditioner for the growth of plants [1]. Additionally, fermented residues could be used as animal feed after mushroom cultivation [2]. Thus the cultivation process of Pleurotus [8] can solve one of the most important problems in soil waste disposal, economical gain and protect the environment. environment, promote the success of any remediation approach and Compared to the expensive engineering techniques, biological degradation (biodegradation) strategies and bioremediation techniques are cost effective as well as environmental friendly approach for remediation of contaminated soils or residual waste & un cleaned water. With their enzymatic property Due to their extensive enzymatic activity additionally degrades The matters spoilage of foods & bioterioration of household waste like raw residue Wheat flour, rice flour, gram flour and agricultural ashes [3] [4] of wheat (choker),rice coverings, burned and filtered teas, raw vegetables washing, utensils washing water. Are considering as wastes

Oyster mushroom (Pleurotus Ostreatus) mycelia Play very powerful Role More than 95% than different mushroom species .By decompose natural compounds & used these compound as a growth promoter for there mycelium growth, This organic degradation is a method called bioremediation. . Bioremediation functions [16] through exploitation of the diverse metabolic capabilities of microbes to detoxify or remove organic contaminants. From environment Over the years, biodegradation and or bioremediation [12] [13] [17] has become the preferred the remediation strategy for the clean up [14] of all agro& household waste contaminated soil & water given that the method is inexpensive and environmentally sustainable, and can accelerate naturally occurring through biodegradation processes

OBJECTIVES

To see the Fungal enzymatic activity on any Agriculture raw and washing waste substrate to Increase the Productivity of Mycelium growth [18] [22] [23] in a given time ,temperature or Substrate Media Its Shows the Nutrietitive compound act as a growth promoting agent [5] to the sample of oyster mushroom Cleaning water & soil waste [16].

Low coast Substrate preparation for the mycelium growth [18].

Conversion of waste matter to the Productive [6][8] Compound Without Creating Pollution.

MATERIALS AND METHODS

Materials

Swan culture of OM Mushroom or seed For Mycelium growth

Stain sources: *Pleurotus Species. Pleurotus Ostreatus*

From DMR SOLAN (H.P) , Media Malt Extract powder and Agar Agar type I, Reagents . Test Following The all sterility requirements of glassware, media, sterile environment with inoculating loop, Laminar Air flow Burner lamp, etc for Making Media Plates inoculated with given Stain Containing Media addition with

Sample

G1agricultural waste (all compound in fixed ratio)
G2 ash
G3water waste

Sample Of raw food agricultural waste ash & water waste

The product we carried or substrate use are house hold waste like raw residue Wheat flour, rice flour, gram flour and agricultural ashes[9] of wheat (choker),rice coverings, burned and filtered teas, raw vegetables washing, utensils washing water[15][19].

Separation of given Sample involves

Separation with sieves of different mess size according to need for the Sieving of raw food stuff contains low moisture content.

Another method is separating funnel for the separation of solid to liquid or oil & greases into Liquid, also used to different washing of raw food stuff.

Ashes or Residue is on action of burning or accumulation by collecting through Scrapping, Burning area of agriculture post-harvest waste and house hold food making process.

GROWTH PROMOTION TEST

These Experiment In G1, G2,G3 for these purpose on sample were surface sterilized after separating with unused raw material By using sieving ,Extracting, filtration, Centrifugation & ash making mix plate media in 1mg/20ml of the single plate in case of G1,G2,G3, test sterilized The conical flasks were closed with cotton plugs and were sterilized by autoclaving at 121°C (15 lb psig) for 15 minutes. The contents of the conical flasks were poured aseptically into sterile Petri plates are allowed to solidify with The mix of 1ml of given Pleurotus Ostreatus Stain prepared in inoculum preparation of dilution 10^{-3}

These sterilized medias were used to subculture the fungal culture. The Petri plates were incubated at 22±2, 24°C for 24 to 48 hours. Growth Activity should measure in no of colonies the average & diameter of colony no for each sample was calculated. The count of colony obtained by the test sample was compared with that produced by controlled reference standard. Also check the Size of colony shows the Multiplication Effect of mycelia growth.

Growth of mycelium

To see the fungal enzymatic activity on any Agriculture raw and washing waste substrate to Increase the Productivity of Mycelium growth in a given time, temperature or Substrate media Its Shows the waste conversion into Nutritive compound act as a growth promoting agent to the sample of oyster mushroom**.**

Media Malt Extract powder and Agar Agar type I.

The medium was prepared by dissolving the specified quantity of the Media Malt Extract powder 2gm and Agar Agar type (I) 2gm medium in distilled water by heating on a water bath and were dispensed in 100 ml volume conical flasks. The conical flasks were closed with cotton plugs and were sterilized by autoclaving at 121°C (15 lb psig) for 15 minutes.

The contents of the conical flasks were poured aseptically into sterile Petri plates are allowed to solidify with the mix of sample. These sterilized Medias were used to subculture the fungal culture. The Petri plates were incubated at 22±2, 24°C for 24 to 48 hours.. The colony obtained by the test sample was compared with that produced by controlled reference standard.

his present study demonstrate that oyster mushroom media In growth promotion test showing the maximum colonies in raw food stuff then ashes [20] than washing water shown by minimum concentration of waste or unused product. All addition of waste product provided better results in growth and bioremediation [16] [24] [21], Pleurotus Ostreatus act as a scavenging agent & growth promoting agent showing Significantly increase in effective substrate or low coast waste Management for the waste food Stuff creating new Fruiting mushroom body to grow In it & Utilized to environment cleanups.

Strain inoculum preparation

In Growth promotion test or activity the concentration of give sample is prepared by the addition of some culture from the given reference primary strain derived from Mother culture strain of mushroom Pleurotus Ostreatus with gauge wire loop diameter of 2mm Full with culture strain & Mix with Sterile and autoclaved Water capacity of 10ml shake till solution get hazy (mycelia threads get fragmented) equally. Take three time dilution by taking one ml from each dilution into the 10ml of sterile water tube

Then used under sample Exa.mined with minimum concentration on given examined sample .

To check there active growth effect on different substrate or different media containing compound waste.

Preparation of the media

Composition of nutrient agar media.

Media Malt Extract powder and Agar Agar type I.

The medium was prepared by dissolving the specified quantity of the Media Malt Extract powder 2gm and Agar Agar type (I) 2gm medium in distilled water by heating on a water bath and were dispensed in 100 ml volume conical flasks. The conical flasks were closed with cotton plugs and

were sterilized by autoclaving at 121°C (15 lb psig) for 15 minutes.

The contents of the conical flasks were poured aseptically into sterile Petri plates are allowed to solidify with The mix of sample. These sterilized medias were used to subculture the fungal culture. The Petri plates were incubated at 22±2, 24°C for 24 to 48 hours. No of colony & Diameter of colony was measured and the average diameter for each sample was calculated. The no of colony & diameter obtained by the test sample was compared with that produced by controlled reference standard.

PROCEDURE

Each Petri dish was filled to a depth of 4-5 mm with a nutrient agar media that was previously mix with suitable G1, G2,G3 sample, and then allowed to solidify. The Petri dishes were placed on level surface so as to ensure that the layer of medium is in uniform thickness. The Petri dishes were sterilized at 160-170°C in hot air oven for 30 mins before use. Pouring one ml of 10 $^{-3}$ fungal stain dilution for test compounds and one for control standard. The Petri dishes were incubated at 24°C for 24 hrs. to 48 hours. Colony measured and the average diameter for each triplicates sample was calculated. The no of colony & there diameter obtained by the test sample was compared with that produced by standard reference stain of oyster mushroom

Data Collection Procedure

Collection of Different Sample from agriculture waste Of post-harvest, Raw food stuff, utensil washing water ,ashes of agriculture and wood waste

Maintaining & enhancing mycelium & substrates Of Pleurotus Ostreatus Hypha for Bioremidial studies,

All the experimental Performed in triplicates and the data were expressed as the mean & standard Deviations.

Testing of given specimens for Data collection & Results

GROWTH PROMOTION (mean & Standard deviation) on SampleG1,G2,G3.

Table 1. CFU 10-3 After Incubation For Three Days At Temparature 24° c

S NO.	NAME	CFU10 $^{-3}$
1	control	58
2	G1 Raw food waste	62
3	G2 agriculture ash waste	60
4	G3 washing	59

Grahical Representation

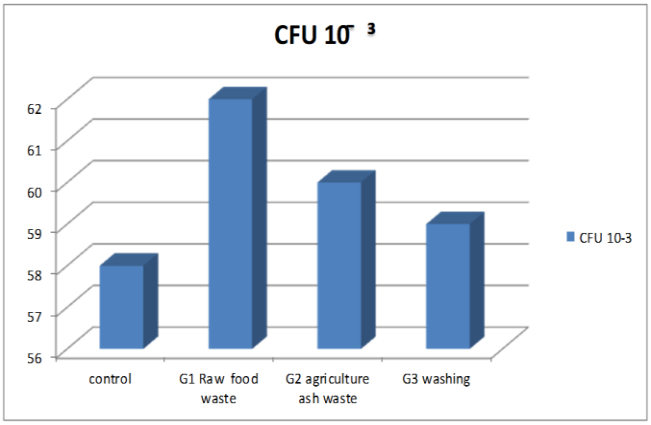

Figure 1. CFU 10-3 After Incubation For Three Days At Temparature 24° c

Table 2. Colony Sizes After Incubation For Three Days At Temparature 24° c

S NO.	name	colony size(mm)
1	control	1.0
2	G1 Raw food waste	4.0
3	G2 agriculture ash waste	1.06
4	G3 washing	1.03

Grahical Representation

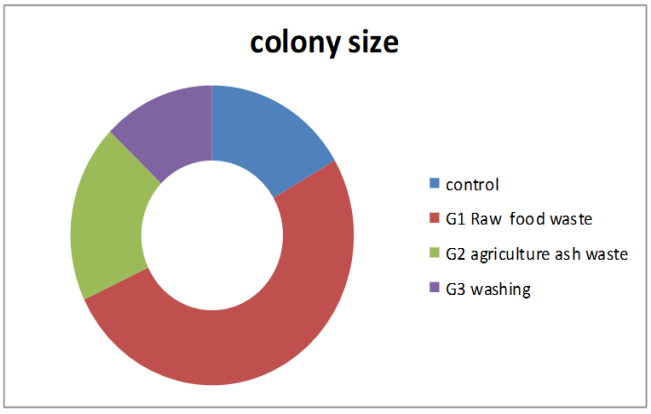

Figure 2. Colony Sizes After Incubation For Three Days At Temparature 24° c

DISCUSSION AND RESULT

This present study demonstrate that oyster mushroom media In growth promotion test showing the maximum colonies in [G1] raw food stuff then [G2] ashes than [G3] washing water shown by minimum concentration of waste or unused product. All addition of waste product provided better results in growth Promotion and bioremediation ,Pleurotus Ostreatus act as a scavenging agent & growth promoting agent showing Significantly increase in effective substrate or low coast waste Management for the waste food Stuff creating new Fruiting mushroom body to grow In it & Utilized to environment clean ups.

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