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Sustainability of Environmental Resources with Pleurotus Ostreatus to Promote the Growth by Degradation of Refinery Oils Waste

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Abstract

Acquaintance of environmental issues and their increased risks, Industrial development, rehabilitation and restoration work creating a big Ecological imbalance. Pleurotus Ostreatus play a very vital role for the sustainable resource development maintaining the ecosystem by scavenging oil refinery waste that pollute the soil, air & water too .oils pollutants forming upper most close layer prevent to growing new species. Bioremediation is becoming booming due to its ecological approach. Their scavenging ability suggests their usefulness with their enzymatic activity to break down oily substances or growth on it remove pollutants. Pleurotus Ostreatus have the potential to break down oil & toxins at maximum extent.Studies includes the estimation of nutrients in oily Compound suck by pleutrotus Ostreatus cultivated on three agricultural & oil refinery waste product were carried by using Cup plate method on Soyabean oil, Coconut oil & Mustard Oils in different oil refinery& extraction shops.Result were obtained from the given oil compound at different concentrations10µl, 20µl,30µl,40µl Which also comprised the control & combined effect of oil assessed.

Soyabean oil shows maximum zone of exhibition, growth area than Coconut oil then mustard oil in the triplicates Pleurotus Ostreatus show Miraculously growth on oil as activator ,Growth on waste materials decomposition as a bioremideator [22] suggesting a link between Symbiosis and environmental cleanup.

Keywords

Pleurotus Ostreatus, Zone of exhibition, Bioremediation, Cup plate method.

INTRODUCTION

Sustainable enviorment would like is that the to conserve natural resources & shield world ecosystems to support health & well being for quality of air. Water,soil, wild life habitats & carbon emission etc in sustainablility, fungi Play a brand new aapproches of life curing creating Fleming in nineteen thirty Showing the action (life saving) against DiseasesTherapeutic approach conjointly cure the wellbeing was highlighted by wagonwright (2008)[1][3]

With their enzymatic property Due to theire extensive enzymatic pastime it additionally degrades The matters spoilage of foods & bioterioration of substances like , ceramics, carbonates art work oil water colour, acrylic ,wood , bones leather, wool Stones Monuments & soil loaded with Many spores after detoriation of cloth which suggests the extraordinary ability of fungus to live in adverse situation Sedlbauer, K., Krus (2003) [2] also says that hygroscopic

Mushroom possesses a vital part of fungal state developing a large diversity. As a principal component of those are undeserving , however as an entire those play an vital function to hold a health in Human Being & Ecological Nest[33][34]. In Case Of purity of water ,air & soil, Oyster mushroom (Pleurotus Ostreatus) mycelia Play very powerful Role More than 95% than different mushroom species .By decompose natural compounds[30][31][32]. Petroleum merchandise and a few pesticides (standard soil contaminants)[35][36], fungi have the capability to eliminate such pollution from their surroundings[23] except the chemical compounds prove poisonous to the fungus. This organic degradation is a method called bioremediation.[4] Pleurotus Ostreatus :-Grows in salt water facilitates smash Down oil & pollutants In water breaks biodegradable Plastic For the purification of water.[5]

OBJECTIVES

To see the Fungal enzymatic activity on any refinery waste substrate [13][14] [16] to Increase the Productivity of Mycellium growth in a given time ,temperature or Substrate MEDIA[15][21]. Its Shows the Nutrietitive compound act as a growth promoting agent to the sample of oyster mushroom[8]

MATERIALS & METHODS

Materials

Swan culture of OM Mushroom or seed For Mycelium growth

Stain sources: *Pleurotus Species. Pleurotus oysteratous*

From DMR SOLAN (H.P) , Media Malt Extract powder and Agar Agar type I, Reagents . Test Following The all sterility requirements of glassware, media, Serial

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environment with Borer, Laminar Air flow Burner lamp, etc for Making Media Plates inoculated with different Concentration Mix with bio loaded material

Sample Of Oil from different oil refinery waste:-

Collection and preparation Of substrate [9][10]/crude oil from different oil refineries[11] ,oil extraction shops [12] [18]Oil soyabean oil ,coconut oil, Mustard, oil Etc

Growth of mycelium:-

The following fungal strains were used to study the promoting growth activity.

On given oil waste compound :

Soybean oil,Coconut oil,Mustard oil.

In the cup plate method, in case of zone of growth or zone of exhibition

Active mycelium sample poured in circular wells Slowly diffused into the agar layer containing the Oil compounds [6] [19]under test . The zone is formed around the wells or cup in petri dish where zone of Exhibition or growth is measured around the sample Containing wells.

Sample preparation

In Zone Of exhibition 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.

Then used under sample Examined with minimum concentration at 10,20,30,40µl to check there active growth effect on different substrate.

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 oil 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. Diameter of the zone of Exhibition was measured and the average diameter for each sample was calculated. The diameter obtained by the test sample was compared with that produced by controlled reference standard.

Procedure

Each Petridish was filled to a depth of 4-5 mm with a nutrient agar media that was previously mix with suitable Oil sample, and then allowed to solidify. The petridish were placed on level surface so as to ensure that the layer of medium is in uniform thickness [7]. The petridishes were sterilized at 160-170°C in hot air oven for 30 mins before use. [24][25][26]Small sterile borer of uniform size was placed approximately at 10 cm height, having an internal diameter of approximately 6-8 mm and made of aluminium (or) stainless steel. Each plate was divided in to four equal portions along the diameter.[27][28]To each portion one cylindrical cavity was made in medium with the help of sterile borer. Four cavities for test compounds and one for control standard. The petridishes were incubated at 24°C for 24 hrs to 48 hours[17][29][30]. Diameter of the zone of Exhibition measured and the average diameter for each triplicates sample was calculated. The 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 field, shops & refinery different Source (Natural as well as industrial)

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:-

Zone of exhibition (mean & Standard deviation) on oil with Pleurotus Ostreatus

sno.	Sample	ZOE(mm)10µl	ZOE(mm)20µl	ZOE(mm)30 µl	ZOE(mm)40 µl
1	control	10.05	10.06	10.08	10.09
2	Soyabean oil	12.05	14.00	15.50	16.60
3	Mustard oil	10.06	10.08	10.09	11.05
4	Coconut oil	11.03	13.00	13.10	14.00

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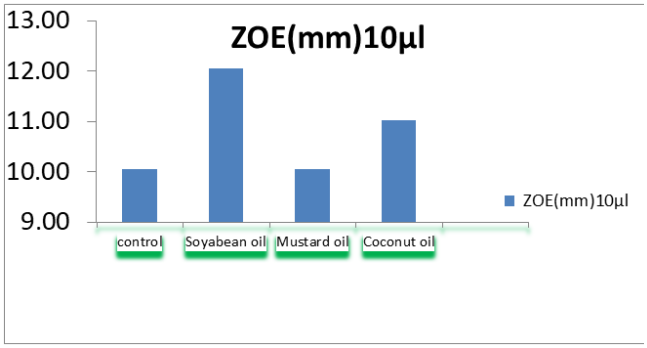
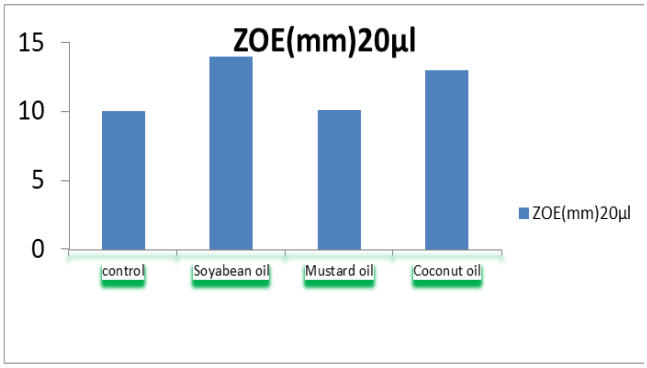
ZOE expressed as Zone of exhibition or Zone of growth at 24 ◦c

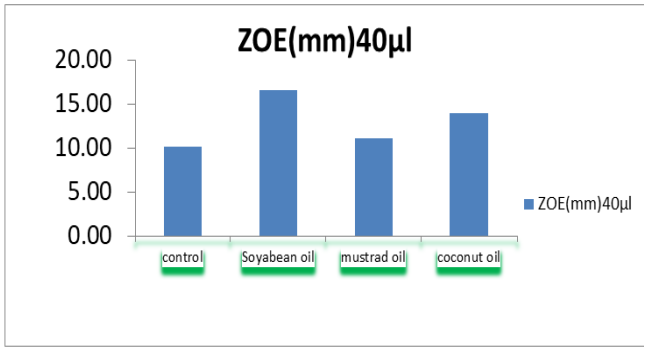
Analysis of zone of exhibition showing by pleutrotus Ostreatus on different oil sample (10µl)



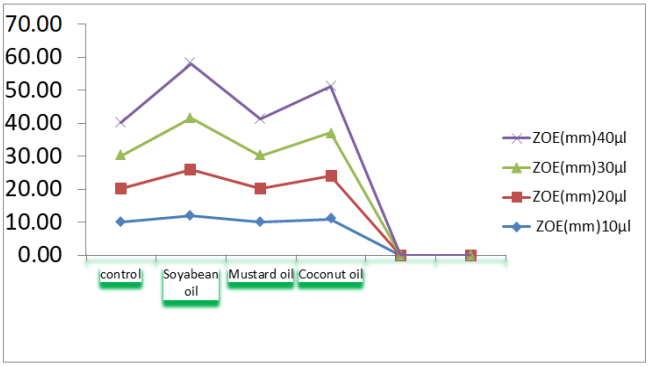
Analysis of zone of exhibition showing by pleutrotus Ostreatus on different oil sample (20µl)



Analysis of zone of exhibition showing by pleutrotus Ostreatus on different oil sample (40µl)



Analysis of zone of exhibition showing by pleutrotus Ostreatus on different oil sample at different concentration (10µ,20µ30µ,40µ)



DISCUSSION & RESULT

The Out Come of the Study indicates that the Possibilities in Pleurotus Ostreatus mushroom Mycelia Should be increases by adding Of Different Supplement, Substrates, temperature, Moisture, humidity etc has great influence in there Performance in There growth Period & growth rate in mycelia mess Formation. Pleurotus Ostreatus have the potential to break down oil t maximum extent. Studies includes the decomposition of oily Compound suck by pleutrotus Ostreatus cultivated on three agricultural & oil refinery waste[16][20] product were carried by using Cup plate method on Soyabean oil, Coconut oil & Mustard oil, compound at different concentrations10µl, 20µl,30µl,40µ l Which also show the minimum concentration effect or activity for the growth promotion of oyster mushroom. represents

Maximum growth in Soybean oil, then Coconut oil& mustard oil, also Shows the maximum mycelium growth spread at a given time period & temperature condition .

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