



Short Communication

Culture conditions for the production of thermostable lipase by *Thermomyces lanuginosus*

B. Sreelatha ^a, V. Koteswara Rao ^{a, b}, R. Ranjith Kumar ^a, S. Girisham ^a, S.M. Reddy ^a

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Highlights

- *Thermomyces lanuginosus* strains were used in the present study was isolated from Warangal, Telangana, India and were confirmed with 28 S rDNA genome sequences were genetically different from each other.
- The maximum lipase was produced by GSLMBKU-10 and GSLMBKU-13 in YES medium with triacetene.
- The stimulatory production was recorded at 6.0, 6.5 and 7.0 by GSLMBKU-10, GSLMBKU-13 and SLMBKU-14 respectively.
- Furthermore, temperature of 45°C was optimum for secretion of lipase by GSLMBKU-14 and GSLMBKU-10, while GSLMBKU-13 it was at 50°C.



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Abstract

Research Article |

Published: 24 November 2017

Chromate Reduction by Purple Non Sulphur Phototrophic Bacterium *Rhodobacter* sp. GSKRLMBKU-03 Isolated from Pond Water

K. Rajyalaxmi , Ramchander

Merugu, S. Girisham & S. M. Reddy

*Proceedings of the National Academy
of Sciences, India Section B: Biological
Sciences* **89**, 259–265 (2019)

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Abstract



Impact of cultural conditions on photoproduction of hydrogen by *Allochrochromatium* sp. GSKRLMBKU-01 isolated from marine water of Visakhapatnam

Rajyalaxmi Kadari ^a ✉, Ramchander Merugu ^b, S. Girisham ^a, S.M. Reddy ^a

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Highlights

- *Allochrochromatium* sp. Strain GSKRLMBKU-01 isolated from marine water was characterized using 16srRNA analysis.
- Succinate induced maximum H₂ (5.68 ± 0.27 ml) production.
- Glycine enhanced the hydrogen production upto 4.82 ± 0.36 ml in immobilized cells.
- pH 7.0 and temperature of 30 °C was optimum for H₂ production.



Abstract

In the present study, photoproduction of hydrogen by *Allochrochromatium* sp. strain GSKRLMBKU-01 isolated from marine water was measured under different cultural conditions. Hydrogen production was measured by using a Gas chromatography using argon gas as a carrier. Among different carbon and nitrogen sources used, succinate induced maximum hydrogen (5.68 ± 0.27 mL) production by immobilized cells, while free cells

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FULL TEXT LINKS



Steroids. 2018 Aug;136:1-7. doi: 10.1016/j.steroids.2018.05.011. Epub 2018 May 25.

Microbial synthesis of mammalian metabolites of spironolactone by thermophilic fungus *Thermomyces lanuginosus*

Sreelatha B ¹, ShyamPrasad G ², Koteswar Rao V ³, Girisham S ¹

Affiliations

PMID: 29803817 DOI: 10.1016/j.steroids.2018.05.011

Abstract

Mesophilic fungi are well recognized as models of mammalian drug metabolism. Thermophilic fungi remained unexplored despite having a unique mechanism of growing at higher temperatures and performing wide diverse reactions. The present investigation is directed to isolate a promising thermophilic fungal strain capable of biotransformation using spironolactone as a model drug. Two stage fermentation protocol was followed for the process. The transformation of spironolactone was identified by HPLC and structure elucidation of the metabolites was done with the help of LC-MS/MS analysis and previous reports. A strain of *Thermomyces lanuginosus* isolated from decomposed banana peel waste was found to be most promising in transforming spironolactone to 4 metabolites viz. 7 α -thiospironolactone (M1) canrenone (M2), 7 α -thiomethylspironolactone (M3) and 6 β -OH-7 α -thiomethylspironolactone (M4), the major mammalian metabolites reported previously. The synthesis of metabolites of spironolactone by *T. lanuginosus* similar to mammals clearly states that this fungus possess enzyme system similar to mammals. Hence, this fungus has the potential to use as a model organism for studying drug metabolism.

Keywords: Biotransformation; LC-MS/MS; Spironolactone; *Thermomyces lanuginosus*.

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Article PDF Available

Inhibitory effect of essential oils on growth and citrinin production by three strains of *Aspergillus terreus*

February 2021

Authors:



Aruna Boda
Kakatiya University



Madhusudhan Reddy



Ramchander Merugu
Mahatma Gandhi University Nalgonda India



Girisham Sivadevuni
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The screening of essential oils of castor (*Ricinus communis*), palmolive (*Elaeis guineensis*), groundnut (*Arachis hypogaea*), coconut (*Cocos nucifera*), brassica (*Brassica oleracea*), sunflower (*Helianthus annuus*), Sesame (*Sesamum indicum*), Eucalyptus (*Eucalyptus globulus*), Neem (*Azadirachta indica*), and Olive (*Olea europaea*) for their effectiveness among the growth and Citrinin production by three strains of *Aspergillus terreus* was investigated. Neem oil, eucalyptus oil and olive oil were more effective inhibitors when compared to other oils. Based on the observations neem oil, eucalyptus oil and olive oil proved to be prospective bio-control agents for *Aspergillus terreus* and Citrinin production.

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International Journal of Botany Studies

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Screening of mycotoxigenic *Aspergillus* in poultry feed of Telangana, India

Authors

Aruna Boda, K Rajya laxmi, Ramchander Merugu, S Girisham, SM Reddy

Abstract

The main source of fungal microflora is originate from materials of plant origin, primarily cereals and feed samples. In relation to humans and animals, mycotoxins exhibit toxic action and are characterized by carcinogenic, mutagenic, teratogenic and estrogenic properties. Due to the diversity of toxic effects, as well as their resistance to the action of high temperature, the presence of mycotoxins in feeds constitutes a potential threat to human and animal health. Incidence of different species of *Aspergillus* were analyzed and isolated from 87 poultry feed samples (starter, breeder, boiler and layer) collected from different places of Telangana region. In all samples, 357 strains representing eleven species of *Aspergillus* such as *A. flavus*, *A. flavipes*, *A. fumigatus*, *A. glaucus*, *A. niger*, *A. nidulans*, *A. ochraceus*, *A. parasiticus*, *A. terreus*, *A. ustus* and *A. versicolor* were probably recorded. All the feed samples were contaminated with a number of different fungal species. These 357 strains of *Aspergillus* were screened for mycotoxin production by Thin Layer Chromatography (TLC) using different spray reagents. Among them, 165 strains representing 11 species were recorded to be positive for production of aflatoxin, oxalic acid, ochratoxin A, patulin, aflatoxin, gliotoxin, nidulotoxin, citrinin and sterigmatocystin etc.

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Bioenergy Research: Biomass Waste to Energy pp 195–229

Bacterial Hydrogen Production: Prospects and Challenges

Ramchander Merugu, Ragini Gothalwal, S. Girisham & S. M. Reddy

Chapter | First Online: 01 July 2021

407 Accesses

Part of the Clean Energy Production Technologies book series (CEPT)

Abstract

Hydrogen is extensively thought of as the most hopeful fuel of the future. At present, most of it is generated from the nonrenewable fuels. Biological hydrogen production has several advantages over hydrogen production by other processes. Biological hydrogen production requires the use of a simple solar reactor such as a transparent closed box, with low energy requirements while electrochemical hydrogen production via solar-battery-based water splitting requires high energy. Microbial hydrogen production especially bacterial hydrogen production by mesophilic, thermophilic and phototrophic production has been described in this chapter.

Keywords

Hydrogen **Mesophilic** **Thermophilic**



A. Sreedharan
Principal
Yashwantrao Degree & P.G. College
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

A. Subhadram
Principal

Magdevi Degree & P.G. College
Hanumakonda.



Original research article

Effect of indigenous fungi on ochratoxin A produced by two species of *Penicillium*

Koteswara R. Vankudoth  , Aruna Boda, Girisham Sivadevuni, Madhusudhan R. SolipuramShow more 
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Abstract

Interaction between indigenous fungal strains in preventing ochratoxin A (OTA) production by *Penicillium verrucosum* and *Penicillium nordicum* was studied in 100 mL of Czapek yeast autolysate (CYA) medium in a 250-mL “U” shaped culture vessel in one end for 3 days. At the end of incubation period, test fungi inoculated and incubated at 27 ± 2 °C for another 14 days to study the inhibition of OTA production was estimated by high performance liquid chromatography (HPLC). Total inhibition of OTA production was recorded with *Aspergillus fumigatus*, *Aspergillus flavus*, *Aspergillus niger*, *Aspergillus ustus*, *Fusarium culmorum*, *Fusarium graminearum*, *Fusarium proliferatum*, *Penicillium chrysogenum*, *Penicillium expansum* and *Trichoderma viridae*. A significant correlation coefficient (r) on growth (0.493 , $P \leq 0.0003$) and OTA production (0.785 , $P \leq 0.0001$) was observed between the tested *Penicillium* species and other co-existing fungi. In conclusion, the present investigation revealed that those indigenous fungi are necessary to minimize potential losses to the poultry farmer and toxicological hazards to the consumer as biological control agent in different foods and feeds.

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Vankudoth Koteswara Rao ✉, Sivadevuni Girisham & Solipuram Madhusudhan Reddy

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Efficacy of Food Preservatives and Volatile Compounds in the Control of Ochratoxin A Production by *Penicillium* Species

V. Koteswara Rao, K. Narasimha Rao, S. Girisham, S. M. Reddy

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Source

Proceedings of the National Academy of Sciences, India Section B: Biological Sciences > 2016 > 86 > 3 > 699-706

Abstract

In the present investigation different volatile compounds and food preservatives were tested for their efficiency in the control of growth and ochratoxin A (OTA) production by *Penicillium verrucosum* and *Penicillium nordicum*. Volatiles such as phenols and formic acid which have no residual effect were proved to be effective in checking the growth and OTA production by both the species of *Penicillium* under study. Vapours of phenols and formic acid significantly inhibited OTA produced by *P. verrucosum*, while aniline and toluene inhibited the OTA production by *P. nordicum* to a significant level. A positive correlation coefficient was observed between the growth and toxin production by *P. verrucosum* (0.55) and *P. nordicum* (0.66) against different volatile compounds tried. Among food preservatives, sodium acetate and sodium metabisulphate were responsible for total inhibition of OTA production by *P. verrucosu...*

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A. Subrahmanya

Principal
Vaagdevi Degree & P.G. College
Kishanpura, Hanumakonda.

Authors



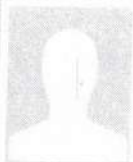
V. Koteswara Rao
Kakatiya University, Department of
Microbiology, Warangal, India



K. Narasimha Rao
Kakatiya University, Department of
Microbiology, Warangal, India



S. Girisham
Kakatiya University, Department of
Microbiology, Warangal, India



S. M. Reddy
Kakatiya University, Department of
Microbiology, Warangal, India

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Article

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January 2020

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Abstract

The association concerning thermophilic fungi and herbivore droppings provides an opportunity to study thermophilic coprophilous fungal communities in the microbial environment. Herbivore dung has long been utilized as a model for studying the progression of saprotrophic fungi during decay or disintegration. Naturally, the fungal community associated with herbivore droppings particularly depends on the location, environment especially temperature and rainfall, and also the herbivore diet. In the present investigation, an attempt has been made to study the prevalence of the thermophilic fungi on herbivore droppings at optimum temperature under laboratory conditions. They were set to grow on yeast extract starch agar composition, isolated and identified based on their morphological and physiological characterization followed by purification. An overall 30 species of thermophilic coprophilous fungi representing

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