

Aspergillus niger

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*

penicillum spp.(P₁) (A₁) *Aspergillus spp* *Aspergillus niger*(A₂)

(A₂)*A.niger*

370 675
(smf)

(A₂)A.niger /

Aspergillus niger :

2008 1.5
(2010 Vibh 2009 Lali)
Pectinase
(2007 Ahlawat ; 2002 Adriana ; 1998 Alkort)
(4-1) α D- galacturonic acid
) Xylose Arabinose Rhamnose
(2007 Venugopal
Pactalelyase Pectinlyase Polygalactoronase
Reda ; 2006 Anthappan Dalvi ; 2004 Nalalia) Pectin esterase
(2008

. 2011 / 10 / 13

. 2011 / 1 / 8

- (Marie) Nazneen ; 2002 (2011) .
- (Jayani) (2005).
- (Anthappan Dalvi) (2006) .
- (Nazneen ; 2002 Marie)
Bacillus spp. (2011)
Monillalaxa Aspergillus spp. *Pseudomonas* spp. *Clostridium* spp.
 (Vibha) *Polyporus squamosus lanuginosus Thermomyces Fusarium* spp.
 (2010).
- Aspergillus niger*
 (GRAS)
 Bruhlmaum ; 1992 Chen Cao)
 (2007 Ladjamo ; 2002 ; Adriana 1994
 Pectinases
- (Vivek ; 2005 Jayani)
 , (2006 Evnesto) (2010
 (2005 Urmila)
- (Hoondel ; 2000 Ricard Reid ; 1999 Jayasinghe Salazar)
 Ranveer ; 2003 Revilla ; 2001 Kashyap ; 2000
 (2005) .

Nalalia) ; 2004 Anthappan Dalvi ; 2006 Reda ; 2008 ; Venkatesh .(2009

:

) Okafor : Trace mineral 1 (2010
% 0.1 0.008%Mn So4 0.04 %Na2 B4o7
Ampicilin

(2010) Okafor PDA
4

(1976 McCance Harrigan)

(2010) Vivek PDA

5 3 30
Tween 80 % 1
4

Czapek – Dox agar

10⁶) 1
5 ° 30 .(/
(2009 Simb ; 2008 Reda) Logule's Iodine Solution

(2010) Vivek

55

Czapek – Dox agar

(/ 10^6) 1

5 ° 30

Logule 's Iodine Solution

A2

(Species)

A₂

(1988) Gam Domsch (1965) Fennell Raper

. Ocular micrometer Stage micrometer

Aspergillus niger

A.niger

10 (2004) Natalia

250

10 40 ² / 15 121

15 ² / 15 121

10 .(Mg So₄.7H₂O%0.1 NH₄H₂Po₄%0.1 NH₄No₃%0.1)
.(/ 10^6)

. / 200 5 30

Vivek

100 (2010)

° 100 (Hot plate) 1600

10 100 4 . 3

30 10

/ 200 5

Crud enzyme

(2010) Vibha

(M 0.05 PH 5.5) Sodium acetate 100

10000)

Whitaker

280 235

(1980) Glanum

. Spectrophotometer

%1

Dinitrosalicylic

1

(M 0.05 PH 5.5) Sodium acetate

30

50

10

(1959 Miller) acid Solution(DNS)

Spectrophotometer

540

(Galactouronic acid)

Galactouronic acid

(1 μ mol)

1

Harrigan)

(1)

.(1976 MaCance

. 1

<i>Aspergillus</i>		A ₁
<i>Penicillium</i>		P ₁
<i>Penicillium</i>		P ₂
<i>Fusarium</i>		F ₁
<i>Aspergillus</i>		A ₂
<i>Aspergillus</i>		A ₃
<i>Fusarium</i>		F ₂
<i>Penicillium</i>		P ₃
<i>Aspergillus</i>		A ₄
<i>Moniliella</i>		M ₁

Czapek – Dox agar

(1993) Galiotou

(1999) Crottie

(1)
(P 1 A 2 A 1)

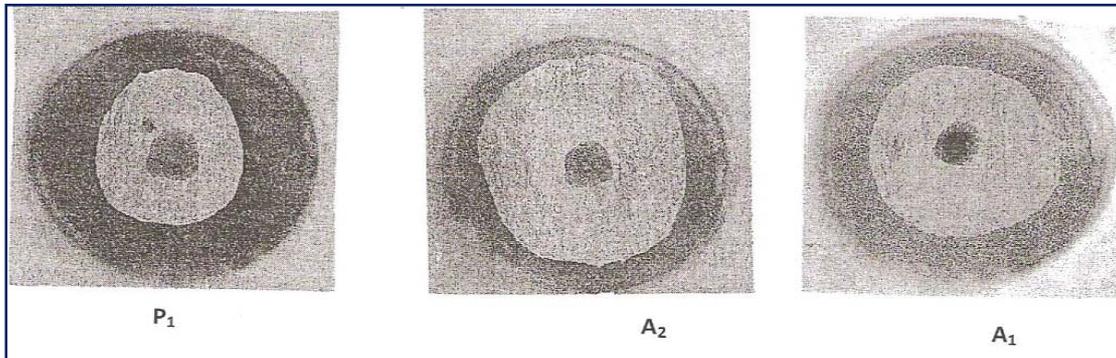
Madhav)Logule 's Iodine Solution

(2002 Pushpalatha

(1979 Blevins Davis) "

2 3.4 3.7 P1 A1
A2

(2)
A2
2 4



Czapek – Dox

(P 1 A 2 A 1)

. 1

agar

. 2

() 5) 5 (() 5		
2.2	4	3.8		A ₂
2.4	3.4	2.9		P ₁
1.8	3.7	3.1		A ₁

A₂

A₂ (3)
1965) Fennel Raper
. *Aspergillus niger*

(1988) Gams Domsch (

A₂

.3

	Vesicle
4	Conidiophores
μ4.5	Conidia
'	Conidal heads

Aspergillus niger

(2)

SSF (2010) Okafor / 370 675
Penicillium chrysogenum *A.niger*

A.niger Smf
 11 SSF *A.niger* Polygalactuonase
 6 *A.niger* Smf
 Solid – air Smf SSF Catabolic repression
 (2009 Venkatesh)



A.niger . 2

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PRODUCTION OF PECTINASE FROM *ASPERGILLUS NIGER* BY USING SOME FRUIT PEELS

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ABSTRACT

Ten filamentous fungi isolated from a growaste samples .Three isolated were of high productivity for pectinase enzyme compared with other isolates , depending on diameter of clear hydrolyzed zones on the medium plates containing commercial pectin as sole carbon source , this isolates were *Aspergillusniger* (A₂),closely followed by *Aspergillus* sp.(A₁) and *penicillum* sp.(P₁) . The three isolates also produced pectinases with different a growastes (Orange peels , Apple peels , Banana peels)as the sole carbon source ,*Aspergillusniger*(A₂) was the best isolate for pectinase production on the medium containing orange peels as the sole carbon source . Peak pectinase activity of 675 and 370 u/mg protein was respectively obtained by solid – state fermentation (ssf) and submerged fermentation (smf) for *A.niger*(A₂) .Solid – state fermentation yielded higher levels of pectinase activity than the submerged fermentation . The strain of *A.niger*(A₂) have good prospect for pectinase production ,and the orange peels is a good low – cost fermentation substrate for pectinase production by the investigated isolate

Key words: pectinase, *Aspergillus niger*