

## *Aspergillus amstelodami*

(2010 / 8 / 16 2010 / 6 / 20 )

(30 25 20 15 10) (sublethal)

*Aspergillus* ( Thymol <sup>3</sup> / ) (8-Azaadenine)  
*amstelodami*

( )

<sup>3</sup> / (30 25)

:

### **Mutagenic Effect of Thymol in Conidia of the Fungus *Aspergillus amstelodami***

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#### **ABSTRACT**

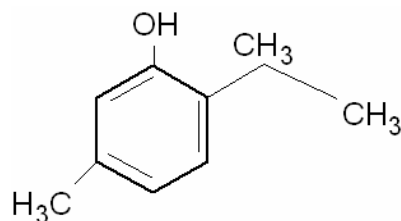
In the present research, five different sublethal concentrations (10, 15, 20, 25, 30)  $\mu\text{g}/\text{cm}^3$  of thymol were tested for their ability to induce forward mutation resistant to the

toxic base analogue (8-Azaadnine) in conidia of *Aspergillus amstelodami* by the growth-mediated method.

All five concentrations showed mutant frequencies significantly higher than the spontaneous one, (the negative control). but significance of the mutagenic effect was found in the last two concentrations (25, 30)  $\mu\text{g}/\text{cm}^3$ .

**Keywords:** Mutagenicity, *Aspergillus amstelodami*, Thymol.

Thymol (2004)  
 (Panizzi *et al.*, 1993) *Thymus Vulgaris*  
 (Koruluoglu *et al.*, 2009) *Origanum onites* (Federal, 2003) Eucalyptus  
 alcohol Crystals Ether  
 $\text{C}_{10}\text{H}_{14}\text{O}$  (Elodie *et al.*, 2009)



(Bruneton, 1999)

(Talei and Meshkatalasadat, 2007 ; Domenico *et al.*, 2005)

(Sokovic *et al.*, 2009 ; Liu *et al.*, 2009 ; Ameziane *et al.*, 2007)

(Liolios *et al.*, 2009 ; Braga *et al.*, 2007 ; Federal, 2003)

.....

Efrat

*E.coli*

(2007) Roni

(Sebile and Eyyup, 2008)

(Ames, 1975)

.(Hart and Jones, 2005)

(Carcinogens)

(Mutagens)

.(Sugimura, 2000)

*Aspergillus amstelodami*

.(Jinks and Croft, 1971)

*Aspergillus amstelodami*

A<sub>1</sub>(WA<sub>1</sub>)

.(Caten, 1979)

:

Caten (1979)

.

Minimal medium

Malt extract- salt medium

**:8-Azaadnine**

•

Fluka

(Adnine)

(Dhahi, 1978) <sup>3</sup> /

10

*Aspergillus amstelodami*

<sup>3</sup> /

5000

<sup>3</sup> /

50

**:Thymol**

•

( )

1000

.(2004 )

.D.M.S.O <sup>3</sup> 50 Thymol 0.05 <sup>3</sup> /

20 ° 63-62

(Heamocytometer)  $A_1$  (CMTS)  
 .(1999 ) <sup>3</sup> / 10<sup>7</sup>

(8-AZA) 8-Azaadnine  
 .(1999 )

(MIC)

Thymol

*A.amstelodami*

°30

Thymol

(M)

(Control)

( )

:

$$100 \times \frac{- ( )}{( )} =$$

**Thymol**

/ (30 25 20 15 10) : Thymol

.(Azevedok, 1970)

.....

Thymol  
(Negative control)

(MD) *A. amstelodami* A<sub>1</sub>  
(AZA) Thymol Thymol  
(Sugimora *et al.*, 1977)

		MD + AZA	<sup>3</sup> 0.5	10 <sup>0</sup>
<sup>3</sup> 0.1			10 <sup>-5</sup>	10 <sup>0</sup>
° 30			.MD	10 <sup>-5</sup>

Thymol  
Standard Error (SE)  
%1 t(2+2) (t)

(Steel and Torrie, 1980)

*A.amstelodami*  
<sup>3</sup> / 60

(1980) Brusick

(1)

*A.amstelodami*

%100     3 /     5     %11.0

D.M.S.O     3 /     60

*A. amstelodami*     ( )     : 1

.(point inoculation)     Thymol

		( )				3 /
		R4	R3	R2	R1	
	2.1	2.5	1.5	2	2.4	0
11.0	1.87	1.8	1.9	2	1.8	5
14.3	1.8	2	2	2	1.2	10
25.23	1.57	1	1.9	1.5	1.9	15
40.5	1.25	1.3	1.3	1.3	1.1	20
56.2	0.92	0.9	0.7	0.9	1.2	25
65.71	0.72	0.5	0.6	0.8	1	30
75.23	0.57	0.1	0.6	0.7	0.9	35
85.7	0.3	0.1	0.1	0.4	0.6	40
85.7	0.3	zero	0.2	0.4	0.6	45
84.8	0.32	0.4	0.2	0.1	0.6	50
87.14	0.27	zero	zero	0.5	0.6	55
100	0.0	zero	zero	zero	zero	60

3 /     60

.(Razzaghi, *et al.*, 2008 ; Liu, *et al.*, 2009)     *A. amstelodami*

15 10

(Sublethal)

3 /     30 25 20

Ames McCann

(1989) Babudri and Politi

*A. amstelodami*

(Toxic level)

(1978)

.DNA

(2)

( )

$10^{-7} \times$  8-Azaadenine  $10^7 \times$  : 2  
*A. amstelodami* A1  
 Thymol

R3			R2			R1			/ ) ( <sup>3</sup> )
1.66	42	25.20	1.86	50	26.85	1.78	48	27.00	0
2.68	47	17.48	2.97	58	19.50	2.95	54	18.30	10
4.15	43	10.35	4.28	75	17.50	3.72	62	16.65	15
6.00	63	10.50	5.80	87	15.00	5.06	78	15.39	20
7.25	87	12.00	7.40	102	13.78	7.52	95	12.62	25
9.86	106	10.75	9.82	110	11.20	9.87	115	11.64	30
17.45	200	11.46	18.74	125	6.67	17.45	200	11.46	HNO <sub>2</sub>

$10^{-7} \times 1.76$  ( ) (3)

10

$10^{-7} \times (9.85 \ 7.39 \ 5.62 \ 4.05 \ 2.86) :$  <sup>3</sup> / 30 25 20 15

(2007) Mezzoug *A. amstelodami*

Ioannis *et al.*, ) DNA

G,C (1998

.(Aydin *et al.*, 2005) DNA

*A. amstelodami*

$10^{-7} \times$  : 3

Thymol

$t_{(4)}$	$\pm$	R3	R2	R1	( $\beta$ / )
-	$1.25 \pm 1.76$	1.66	1.86	1.78	0
0.877	$0.091 \pm 2.86$	2.68	2.97	2.95	10
1.815	$0.168 \pm 4.05$	4.15	4.28	3.72	15
3.010	$0.285 \pm 5.62$	6.00	5.80	5.06	20
4.493*	$0.077 \pm 7.39$	7.25	7.40	7.52	25
6.472*	$0.0152 \pm 9.85$	9.86	9.82	9.87	30
34.55*	$0.43 \pm 17.88$	17.45	18.74	17.45	HNO <sub>2</sub>

.( ) : 0

.( ) : HNO<sub>2</sub>

t :  $t_{(4)}$

. %1 : \*

(3)

$.10^{-7} \times 1.76$

: %1  $t_{(4)}$

.1

$^3 /$  20 15 10

$t_{(4)}$

$t_{(4)}$

$10^{-7} \times 1.76$

3.747

*A.amstelodami*

(Patri and Silano, 1989)



.....

DNA

DNA

.(Bridges *et al.*, 1983)

<sup>3</sup> / 30 25 .2

(10<sup>-7</sup> × 7.39) (<sup>3</sup> / 25)

3.747 t<sub>(4)</sub> 4.493 t<sub>(4)</sub> 10<sup>-7</sup> × 1.76

<sup>3</sup> / 30

t<sub>(4)</sub> 10<sup>-7</sup> × 1.76 10<sup>-7</sup> × 9.85

4.032 t<sub>(4)</sub> 3.747

(Azevedok, 1970)

10<sup>-7</sup> × 17.88

.(3)

*A.amstelodami*

DNA

(Farag *et al.*, 1989)

.(2001 ) DNA

.(Undeger *et al.*, 2009)

DNA

(Sebile, 2008)

(Baudoux, 2000)

)

.(2004

Liolios *et al.*, Braga *et al.*,2007 Silano, 1989)

.(2009

(1999)  
*Aspergillus amstelodami*  
 (2004)  
 Thymus Spp.  
 (2001)  
 ( 2)12 . *Proteus vulgaris* *Streptococcus pyogenes*  
 .25-18  
 " (2004)  
 (2004)  
*Nigella sativa* L.

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