

***Lumbricus terrestris* (Linnaeus, 1758)**

/ /

(NJC)**(2008/3/24) (2007/8/1)**

(CDA, EC.

Lumbricus terrestris 3.5.4.5)
 (7.2) Tris-HCl (300)
 (60) (8)
 . (15) (37)
 (1.1 ± 31.76)
L. terrestris
 (0.31 ± 20.24)
 . (1.81 × 10⁻³ M) (Km)
 (6) G-200
 . (95000)

Abstract

The present research includes a study of the activity and properties of enzyme cytidine deaminase (EC. 3.5.4.5) in the extract of earthworm *Lumbricus terrestris*.

Maximum activity of the enzyme was obtained in a reaction mixture containing (300) μM of Tris-HCl buffer at pH (7.2) containing (8) μM cytidine as a substrate and a concentration of enzyme extract equal to (60) μg. The reaction mixture was incubated at (37)°C for (15)min. Under the optimum conditions, the specific activity was found to be (31.76 ± 1.1) μM of uridine per min. per mg protein in the supernatant of *L. terrestris* extracts compared with (20.24 ± 0.31) μM of uridine per min. per mg protein. The Michaelis constant (Km) value was (1.81 × 10⁻³ M).

The research also included an isolation and partial purification of CDA by gel filtration chromatography using sephadex G-200, the number of purification folds for the CDA was (6), and the molecular weight was found to be a round (95000) D.

Lumbricus

terrestris

Annelida

Oligochaeta

Opisthoptera

(8)

(Pancreatic enzyme)

(2 1)

(9)

(Deaminases)

(4 3)

(10)

(5)

(16 15 14 13 12 11)

(CDA ,

EC. 3.5.4.5)

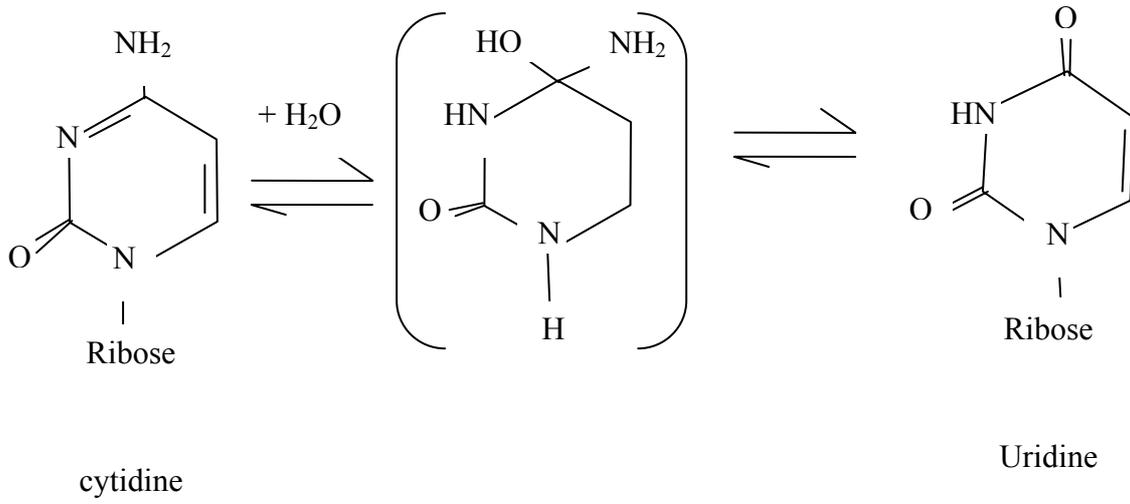
(Cytidine

aminohydrolase)

(7 6)

(18 17)

:



CDA

(19)

Lumbricus terrestris

Tris-HCl
(7.2)

(100)

(20)

DNA

(22 21)

CDA

(23 20 11)

(25)

(24 12)

(MSE-Homogenizer)

/ (400)

(28 27 26 21 15)

(Ultra-Sonic disintegrater)

/ (24.000)

(30)

(4)

(29) (45000 xg)

: :

.1 (Crude Homogenate)

. () .2 (Pellet) (Supernatant)

.3

× 2)

(100

(Sephadax – G – 200)

(90) (30) Sakai

(800000-5000)

(290)

³ (305))

() ³ (0.4) (³ 1

³ (0.4) (3)

(200) Tris-HCl

³ (0.2) (7.4)

. ()

(300) Tris-HCl (5) (37)

(7.2)

³ (4)

³ (2.5) (0.1)

(G – 200)

(290)

(/ ³ 25)

(6)

(Fraction Collector) (Molar Extinction

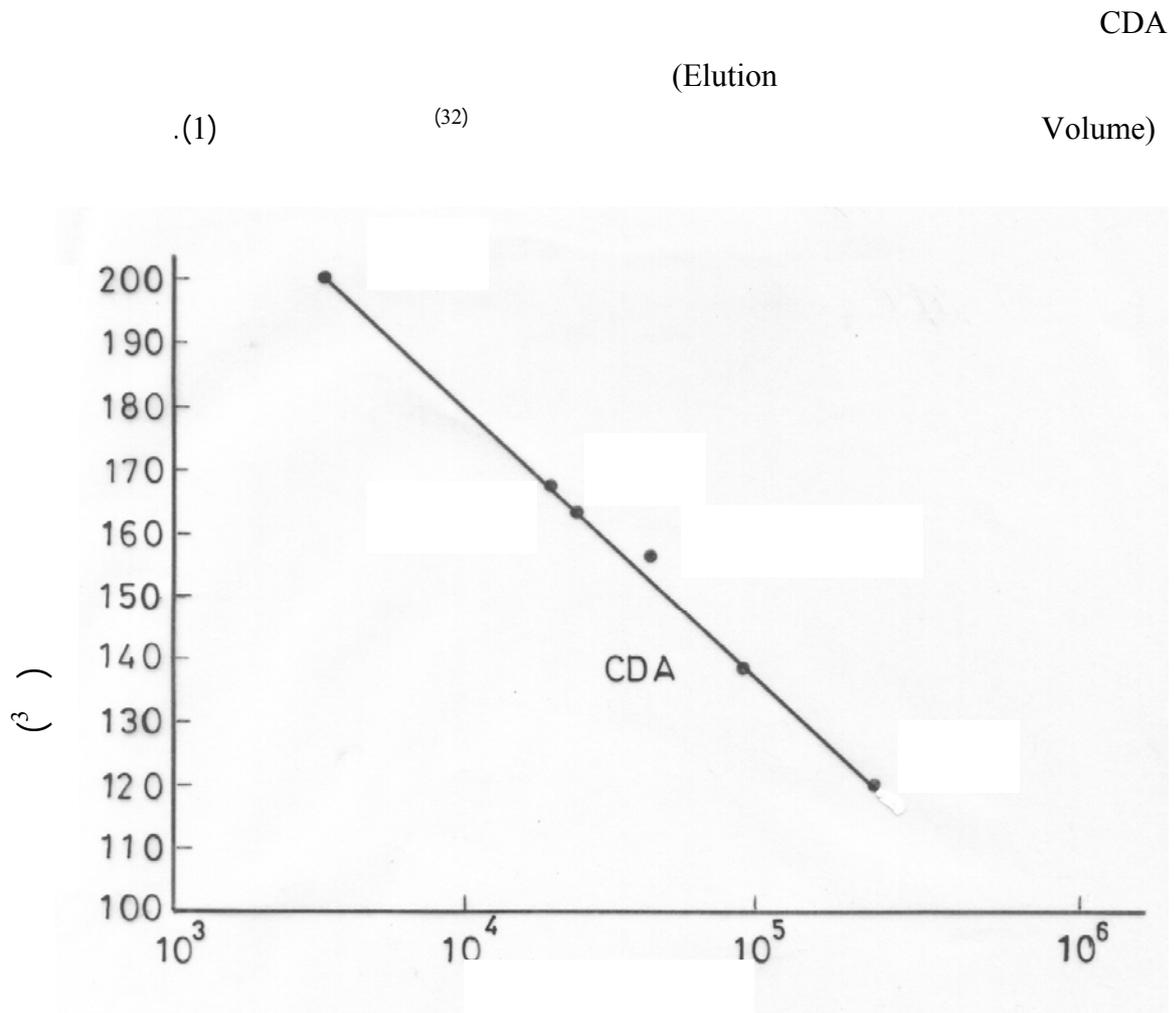
(2.2 mM⁻¹ Coefficient)

(280) (18) CM⁻¹)

(31)

CDA

(32) White Robyte



: 1

CDA

(1)

(% 169)

Lumbricus

CDA

terrestris

(45000 xg)

(290)

(34) *terrestris*

L.

Riftia pachyptila

: 1

Lumbricus terrestris

%	%	* ±	
-	100	0.25 ± 12.01	
69 +	169	0.31 ± 20.24	
44 -	56	0.22 ± 6.73	

/ / : •

CDA

(120-10)
(2) ()

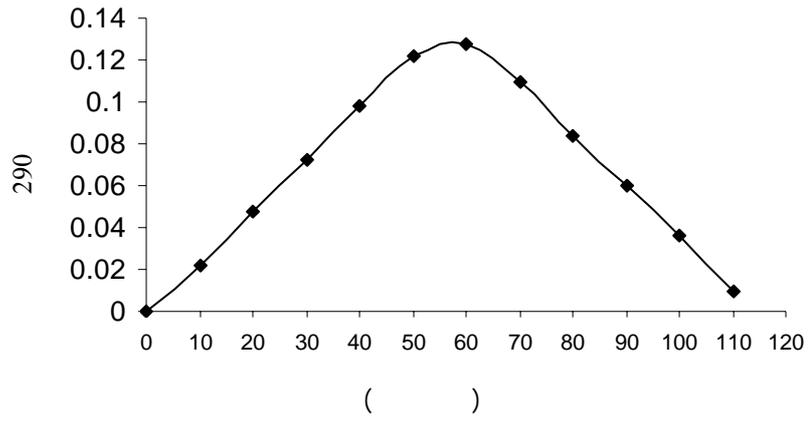
CDA

(Salvage Pathway of
(33) Pyrimidine Nucleotides)

()
(60)

(34) Dallal Bashi

(ES) -

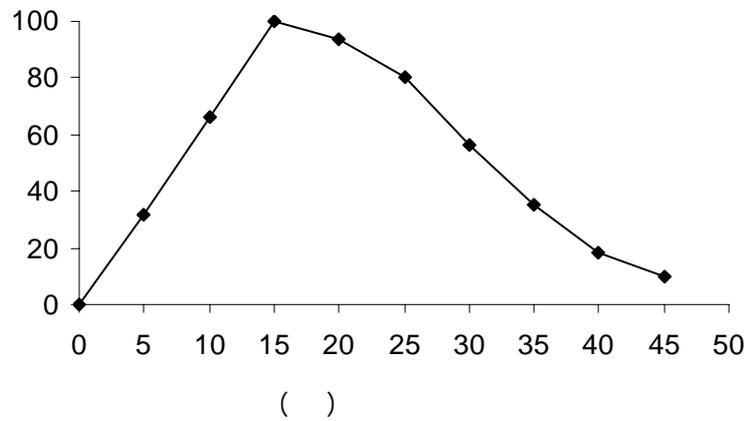


() : 2

L. terrestris

CDA (3)

(15) (15) (



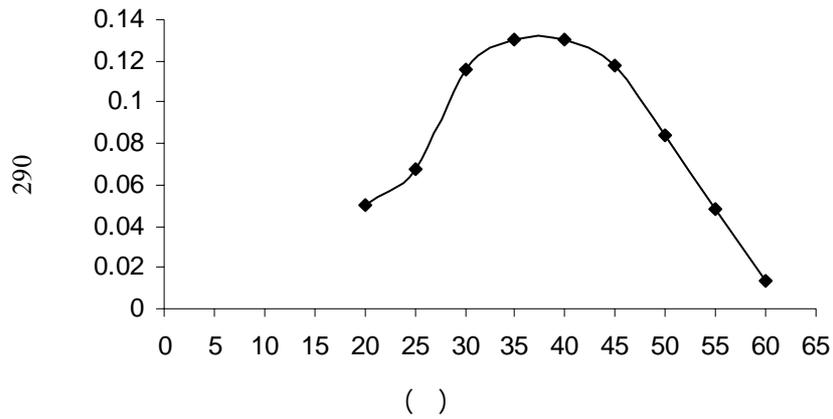
: 3

L. terrestris

⁽³⁵⁾ Al-Chalabi Hassan (40-35)

⁽²⁴⁾ *Entamoeba histolytica*)

. *Trichomanas vaginalis* (37) (4



: 4

L. terrestris

Tris-

HCl

(2)

Tris-HCl

(3)

(7.4)

(200)

Tris-HCl

(300)

(7.4)

(0.35 ± 28.21)

L.

: 2

. terrestris

% +	* ± الخطأ	(Buffer)
100	0.35 ± 28.21	200 µM Tris-HCl
44	0.21 ± 12.53	200 µM Potassium phosphate
83	0.13 ± 23.51	200 µM Citric Acid , Sodium citrate

*
+
: / / %100

Tris-HCl**: 3****. *L. terrestris***

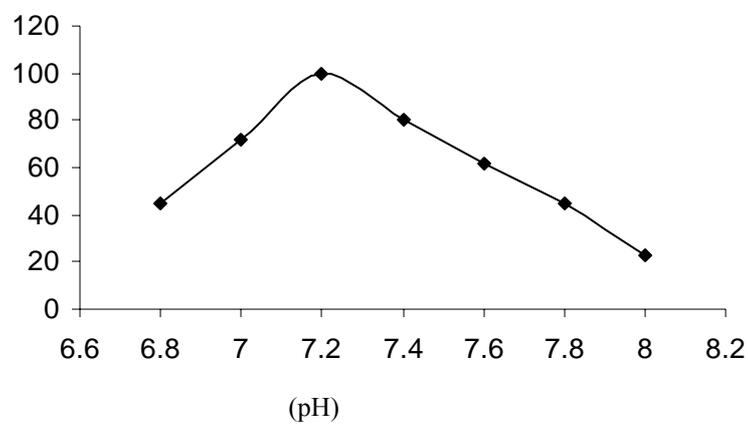
% +	* ± الخطأ	Tris- HCl
51	0.72 ± 15.67	100
92	0.35 ± 28.21	200
100	0.89 ± 30.53	300
68	1.11 ± 20.71	400

*

/ / : *

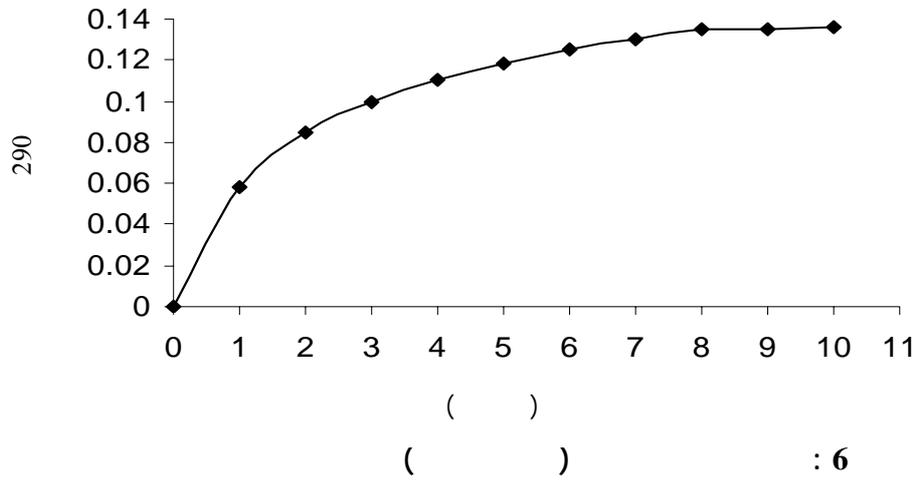
. %100 : +

(7.2) CDA
(24) Tris-HCl (pH) (300)
(7.2) (5) (300)

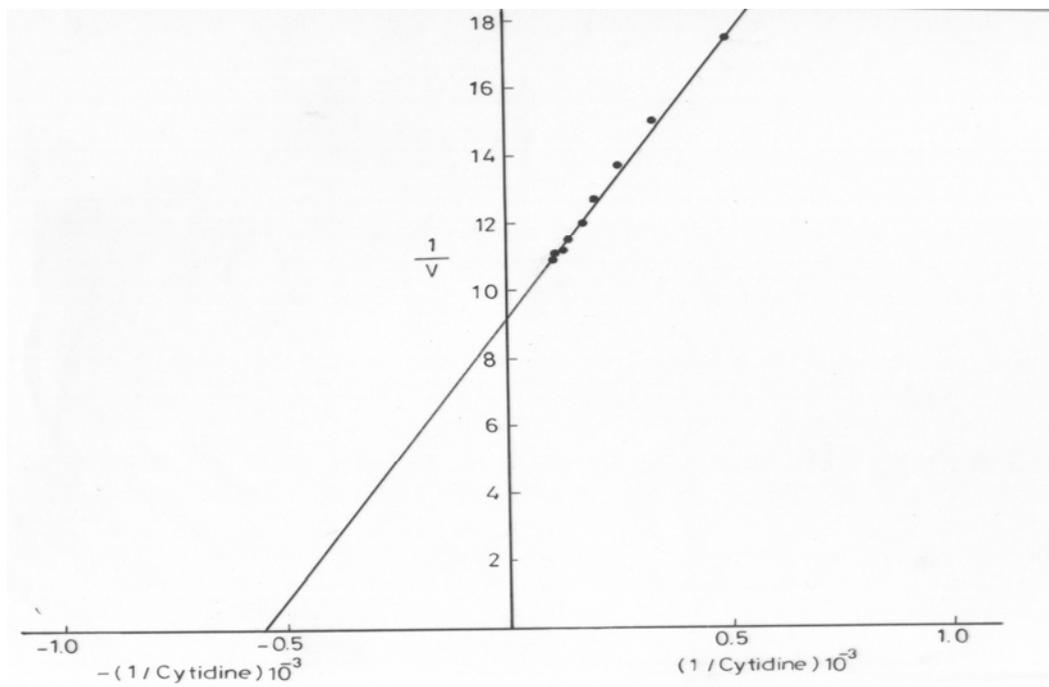
**: 5****(300) μM Tris-HCl**

(300)
(7.2) Tris-HCl
()
(6) (10)

(Km) -
 -
 (1.81 × 10⁻³ M) (Lineweaver – Burk)
 (7) (8)



L. terrestris



: 7

CDA

L. terrestris

(4)

L. terrestris

: 4

60	()
Tris-HCl	
300	
7.2	
8	()
15	
37	

CDA

CDA

(5)

(6)

: 5

%		/U	Units (U) [*]	³ /	
100	1	20.31	51.38	2.53	
90	1.4	27.74	46.06	1.66	
84	1.5	30.39	43.15	1.42	(%75)
73	1.9	38.53	37.76	0.98	
69	5.7	115.00	35.65	0.31	(G-200)

(Unit) *

100)

(G-

()

(1)

(2 ×

200)

(95000)

CDA

(57000)

*E. coli**Giardia intestinalis*

(36)

.(12)

(260000)

13. Raczyska , J., Jones , S. and Krawczinski , *J. J. Clin. Chem. Acta.*, 1996. **13** , 151.
 14. Cui , Li ; Lin , Y.Z. and Zhu, Z.G. *Chin. J. Dig. Dis.* , 1998. **18**, 341.
 15. Alta'ee , A.H. and Ewadh , M.J. *Nat. J. Chem.* 2003, **11**, 484.
 16. Wang , J. ; Shinkura , R. ; Muramatsu , M. ; Nagaoka , H. ; Kinoshita , K. and Honjo , T.J. *Biol. Chem.*, 2006. 281(28) : 19115-19123.
 17. Ashley , G.W. and Bartlett , P.A. *J. Biol. Chem*, 1984, **259 (21)**, 13615.
 18. Smith , A.A. ; Carlow , D.C. ; Wolfenden , R. and Short , S.A. *J. Biol. Chem.* , 1994, **33 (21)** , 6468.
 19. Camiener , G.W. and Smith , C.G. *Bioch. Pharmacol.*, 1965. **14** : 1405.
 20. Vita , A. ; Amici , A. ; Cacciamani , T. ; Lanciotti , M. and Magni , *G. Biochem.* , 1985. **24** : 6020.
 21. Bouffard , D.Y. , Laliberte , J. and Momparler , R.L. *Bioch. Pharmacol.* , 1993. **45 (9)** : 1857.
 22. Greg , L. ; Evan , D. ; Georganne , K. and John , G. *J. Acad. Famil. Phys.*, 2003. **68** : 6.
 23. Yang , C. ; Carlow , D. ; Wolfenden , R. ; Short , S. *Biochem.*, 1992. **31 (17)** : 4168.
- .24
- .2005 .
- .2 : (16) 8
- .25
- .
- 2 .2006 .
- .14 : 17
26. Al-Bachi , S.Z. Enzymatic and Biochemical changes in serum and tissues of benign and malignant Brain tumors , Ph.D. Thesis , College of Science ,
 1. Barnes , R.D. "Invertebrate Zoology". 3rd ed. W.B. Saunders. Co. , Philadelphia , London. 1974.
 2. Lewis , R. ; Gaffin , D. Hoefnagels , M. and Parker , B. "Life". 5th ed. By McGraw-Hill Companies , New York. 2004.
 3. Zhang , H. and Schrader , *S. Biol. Fert. Soil.* , 1993. **15** : 229.
 4. Edwards , C.A. and Bohlen , P.J. "Biology and Ecology of Earthworms". Chapman and Hall , London. 1996.
 5. Lee , K.E. "Earthworms : Their ecology and relationships with soil and land use". Academic Press , New York. 1985.
 6. Springett , J.A. ; Gray , R.A. and Reid , *J.B. Soil. Biol. Bioch.*, 1992. **24** : 1615.
 7. Marinissen , J.C. and de Ruiter , P.C. *Agr. Eco. Envir.*, 1993. **47** : 59.
 8. Hendrix , P.F. "Earthworm Ecology and Biogeography in North America". Lewis Publishers , Boca Raton , Florida. 1995.
 9. Saruc , M. ; Standop , S. and Standop , *J. Pancreas.*, 2004. **28 (4)**, 401.
 10. Lehnirger , A.L. "Principles of Biochemistry". 4th ed. , by W.H. Freeman and Company. New York. 2005.
 11. Ipata , P.L. and Cercignani , G. "Cytosine and cytidine deaminase from Yeast". "In Method in Enzymology". (ed. Patricia , A.H. and Mary , E.J.), Vol. II. Academic Press, Inc. 1978.
 12. Jimenez , B.M. and Osullivan , *W.J. J. Parasit.*, 1994. **24 (5)** , 713.

Vita , A. *Protein-Expr-Purif.*,
1996. **8 (2)** : 247-253.

University of Mosul , Iraq. 2006.
(In English).

.27

.2001 .

28. Ohm – Laursen , L. and Barington , T. *Immunol.* 2007. **178** : 4322.
29. Jankeer , M.H. Raf. *Jour. Sci.* , 1996. **7 (2)** : 1.
30. Sakai , T. ; Watan be , T. and Chibata , I. *Appl. Microbial.*, 1971. **22 (6)** : 1085.
31. Lowry , O.H. ; Rosebruogh , N.J. ; Farr , A.L. and Randall , R.J. *J. Biol. Chem.*, 1951. **193** : 265.
32. Robyte , J.F. and White , B.J. "Biochemical technique , theory and practice" , Wads Worth Inc., Belmont , California , U.S.A. 1987.
33. Minic , Z. ; Pastra-Landis , S. ; Gaill , F. and Herve , G. *J. boil. Chem.*, 2002. **277 (1)** : 127.
34. Dallal Bashi , Z.I. Tikrit *J. Pure Sci.* , 2007. **12 (1)** : 131.
35. Hassan , H.F. and Al-Chalabi , K. Mu. *J. Res. St.* , 1993. **8 (5)** : 199.
36. Vincenzetti , S. ; Cambi , A. ; Neuhard , J. ; Garattini E. and