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Abstract T

SO_4^{2-} M, -G
 M
 MT1, IP4
 T1, DMT1, IP4
 -G IP4
 -M IP4

RNA

1-3. /
4,
5. S
6, 7, MT1, DMT1, IP4,
T1.MT1
A, DMT1
IP4
SCL39),
C, T1
T (SLC30),
M
8-12. H

T, -G, -M, SO_4 , IP4, IPEC-1

Materials and Methods

Cell Culture

IPEC-1 (13) T DMEM/F12 10 % FBS, 2 /L L- (5 /L), (5 /L), (5 μ /L), (S) 37 °C 5 % CO_2 IPEC-1 30–50

Cell Viability Assay

IPEC-1 96- 10⁴. W 80 % DMEM -G, -M, SO_4 , 0, 50, 100, 150, 200 μ /L. A 6, 12, 24, 3-(4,5- -2-)-2,5- -2H- (MTT) . E (-G, -M, SO_4), 20 μ L MTT (5 /L). 4 37 °C. A 150 μ L DMSO 570 (B. -R). C 14.

MT1, DMT1, ZIP4, and ZnT1 mRNA Expressions in IPEC-1 Cells

IPEC-1 (10⁵) 50 μ /L -G, -M, SO_4 , 6, 0 μ /L. T RNA IPEC-1 TRI (I, C, CA, USA), 0.5 μ RNA - DNA 10 μ L P S TMRT (T, T, J). T 30 °C 10, 42 °C 30, 70 °C 15 R - PCR QTM 5 R -T PCR D S (B. -R I, H, CA, USA). T : 1 95 °C, 40 (10 95 °C 25 63 °C). P MT1, DMT1, IP4, T1, β - P E 2.0 (T 1). R

β - 2^{- $\Delta\Delta$ C} 15.

ZIP4 siRNA Transfection

T IP4 I RNA (RNA) : IP4- , 5'-CUCAG UACUUCGUGGACUUTT-3', IP4- , 5'-AAGUCCACGAAGUACUGAGTT-3'. A , RNA (, 5'-UUC UCC GAA CGU GUC ACG UTT-3'; , 5'-ACG UGA CAC GUU CGG AGA ATT-3'). RNA. IPEC-1 RNA, 1 4, (T 2). T RNA (100 L TM2000 R (I, C, CA, USA) T RNA 24 48 , IP4 RNA (RNA) PCR IP4 β -

Transfection with ZIP4 siRNA on Cell Viability

C IP4- RNA- (10⁵ /L). 96- T 500 μ L DMEM + 1.5 L DMEM/F12. T RNA. A 24- 48- MTT

MT1 and DMT1 Expression and Zinc Absorption Rate

N IP4 RNA. A 24- 50 μ /L -G, -M, SO_4 6, T MT1 DMT1 I 16. IPEC-1 (PBS), 1 /L EDTA PBS, H₂O 10 L I (ICP-MS).

Statistical Analysis

D SPSS (19.0) ANOVA. D T ' .G

Table 1 P

PCR	I	N . . G . .	P (5' . 3')	L . .
β-		XM 003124280.3	CCTGCGGCATCCACGAAAC TGTCGCGCATGCCTGGGTA	123
MT1		NM 001001266.2	CTGTGCCTGAAGTCTGGGGAA CACAGAAAAAGGGATGTAGCATG	115
DMT1		NM 001128440.1	GCTCTCATACCCATCCTCACGTTT GGACGTAAACCACGACGAAGTACA	142
4		XM 001925360.3	CAGGGTCATCTGGGAAAGGAAGC CCGGCACTCAGGCACATCGTG	101
T1		NM 001139470.1	AAAATGTGAAGACCCGACATCGTA AGGTTGAATGGTGGTAGCGTGAA	94
M 1				
D 1				
		SLC39A4		
		SLC30A1		

MT1 T1 RNA -G
P<0.05. -M (P<0.05) SO₄,
IP4 RNA -M
(P<0.05). E DMT1
RNA
(P<0.05)

Results

Cell Viability Assay

MTT IPEC-1
(P<0.05).
6, 12, 24 (F .1). -G -M
SO₄
50 μ /L 6-

Cell Viability Assay in ZIP4 siRNA Cells

IPEC1 RNA
IP4 RNA 24 48
(P<0.05), 64.60 % (P<0.05) 78.43 %
RNA 1 (F .3). M
IP4- RNA1 IPEC-1
24 48 (P>0.05) F .3. S IP4 RNA1
24

MT1, DMT1, ZIP4, and ZnT1 mRNA Expressions

F 2
MT1 T1 RNA
(P<0.05), IP4 (P<0.05)

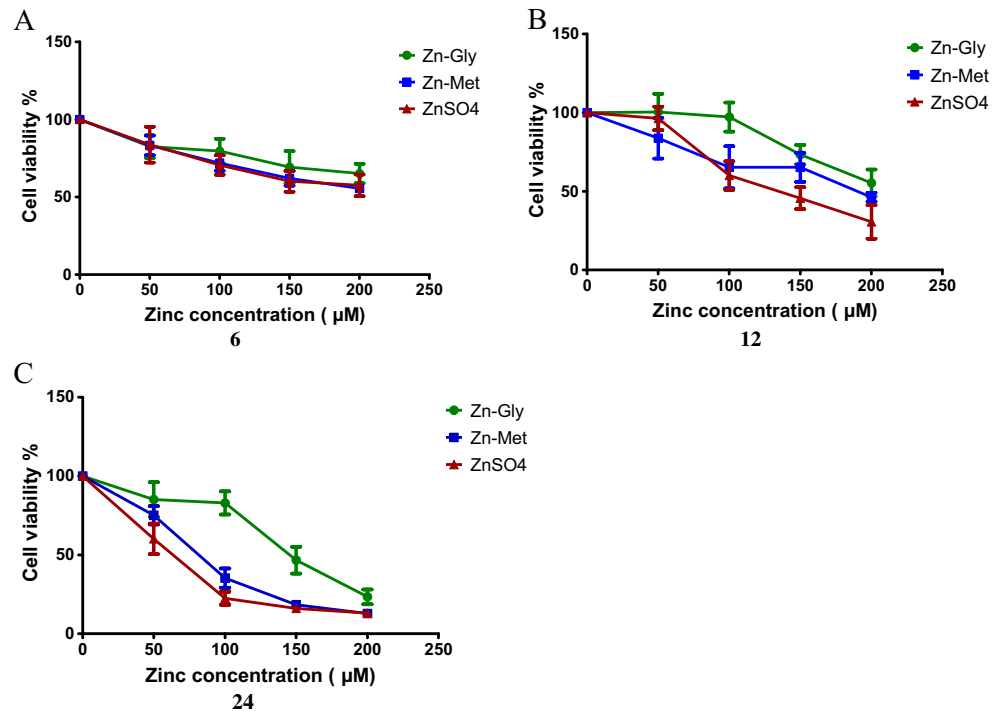
MT1 and DMT1 mRNA Expression and Zinc Absorption Rate in ZIP4 siRNA Cells

A F .4, 16.94 % (P<0.05)
33.62 % (P<0.05) MT1 RNA

Table 2 P
IP4 RNA

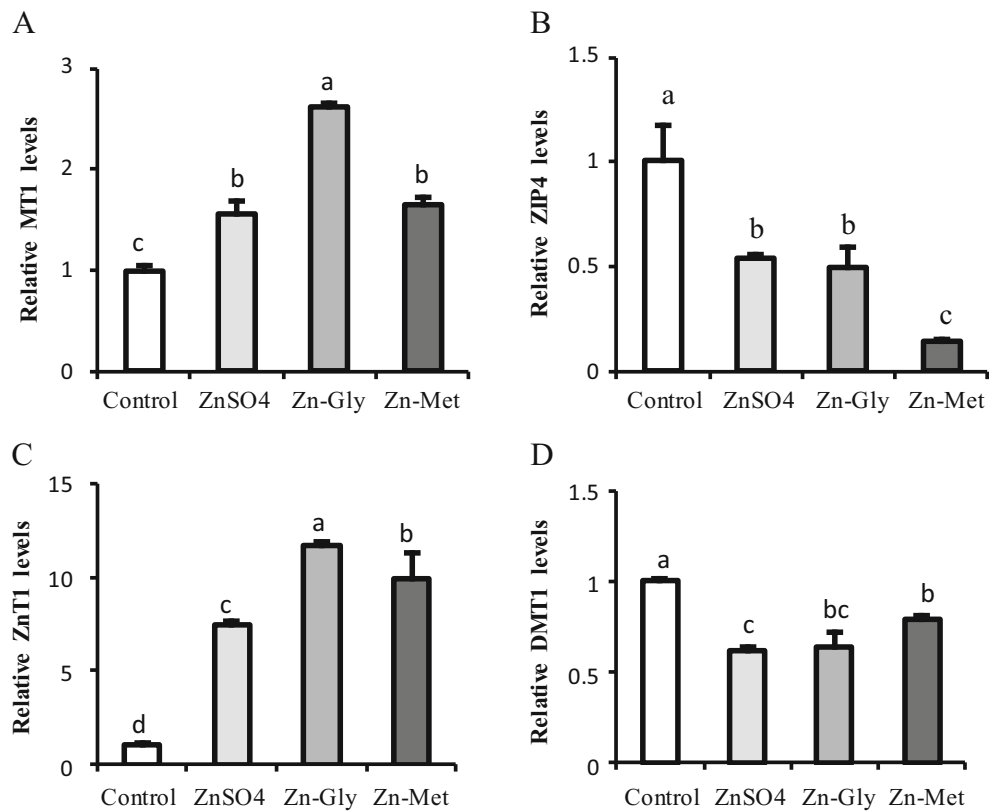
RNA	P (5' . 3')
IP4 RNA-663	S A AAG UCC ACG AAG UAC UGA GTT
IP4 RNA-711	S A CCA ACA UCA CAC UGG CUG ATT UCA GCC AGU GUG AUG UUG GTT
IP4 RNA-1583	S A GUG CAC AAC UUC GCU GAU GTT CAU CAG CGA AGU UGU GCA CTT
IP4 RNA-1978	S A GCU GUC UCU GUA UGA GGA UTT AUC CUC AUA CAG AGA CAG CTT

Fig. 1 V IPEC-1
6-, 12-, 24-
Zn
V SD
($n = 6$)



SO4 -G IP4 28.95 % ($P < 0.05$)
RNA , DMT1 RNA 26.44 % ($P < 0.05$), S IP4
IP4- RNA -G -M 73.33 % ($P < 0.05$)

Fig. 2 R RNA IPEC-1
6-
50 μL /L SO4, -G ,
-M , V
SD ($n = 3$). L
, $P < 0.05$. MT1,
1; IP4,
SLC39A4; T1,
SLC30A1; DMT1,
1



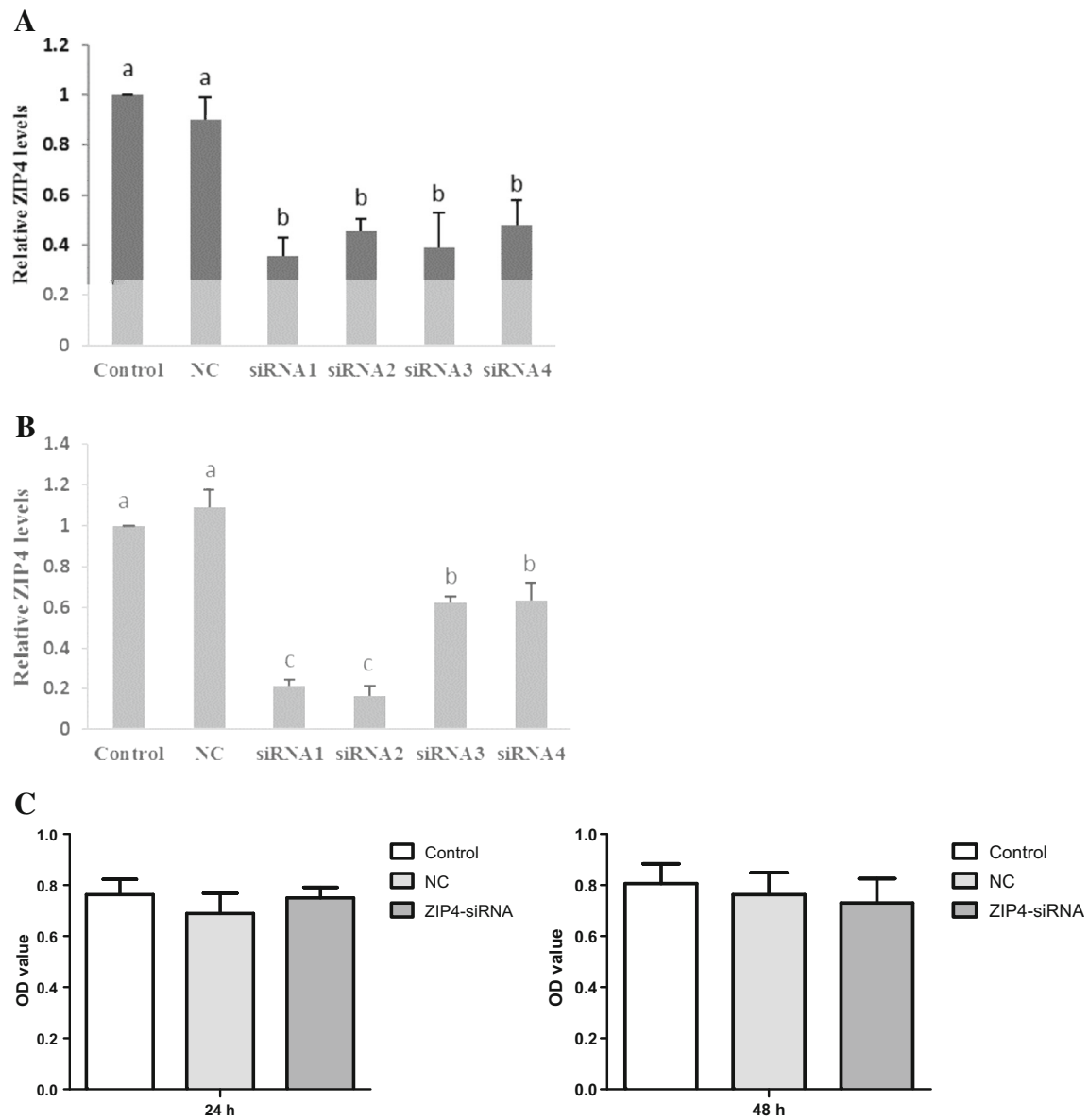
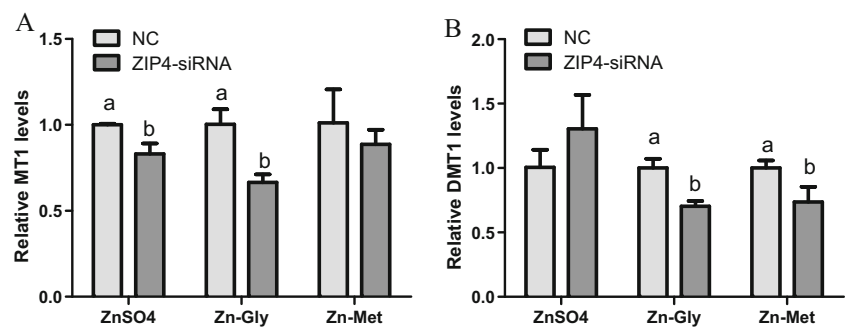


Fig. 3 IP4 RNA F IP4 RNA IP4 RNA RNA1 24 (c) 48 (d). V
R IP4 24 (a) 48 (b). IP4 $P < 0.05$ SD ($n = 3$). L

H^+ , SO_4^{2-} , G^{3-} , M^{2+} , RNA (F.5), IP_4

Fig. 4 D

MT1 DMT1 RNA
IPEC-1
IP4 RNA
V SD ($n = 3$).
L
 $P < 0.05$



IP4
30. H , DMT1 RNA
-G -M
SO₄ , -G
-M IP4- RNA
IP4
T
-G IP4 -M

Conclusions

I
IPEC-1
SO₄ M -G -M
MT1, IP4, T1,
DMT1. IP4
-G IP4
-M IP4.

Acknowledgments T N N
S F C (G N 31472102), K S
P. "973" A N S T
C (G N 2012CB124705).

References

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J B. C 281:24085–24089
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NCIMB 10415
F U B , G , D