

Monoamine oxidase activity in placenta in relation to manganese, cadmium, lead, and mercury at delivery.

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Table 1: Socio-demographic and pregnancy information of the pregnant women.

	Mean \pm SD	Range
Age (years)	29.0 \pm 5.0	19.0 – 39.0
Gestational age (weeks)	39.5 \pm 1.7	28.0 – 42.0
	(%)	
Boys	49	
High education level (>12 years)	56	
Worked during pregnancy	74	
Primiparity	47	
Smoked during pregnancy	25	

Table 2: Descriptive statistic of metal blood concentrations at delivery and MAO activity in placenta

	N	Arithmetic mean ± SD	Interquartile range	Minimum	Maximum
Maternal Mn, ug/L	160	10.5 ± 4.1	8.0 – 12.0	3.0	29.0
Cord Mn, µg /L	159	31.2 ± 13.4	22.5 – 40.4	3.0	75.0
Maternal Pb, µg /L	160	18.4 ± 12.1	12.0 – 20.0	2.0	90.0
Cord Pb, µg /L	159	14.9 ± 9.3	9.0 – 19.0	1.0	63.0
Maternal Cd, µg /L	160	0.98 ± 0.43	0.7 – 1.2	0.1	2.3
Cord Cd, µg /L	159	0.7 ± 0.4	0.5 – 0.9	0.1	2.9
Maternal hair Hg, µg/g	144	0.67 ± 0.5	0.33 – 0.81	0.13	3.5
MAO, nmol/g protein	163	7.8 ± 5.1	3.8 – 10.4	0.4	26.2

Table 3: Correlation matrix for metals in maternal blood and MAO activity (nmol 4-HOQ/g of protein, log transformed) in placenta

	MnB	PbB	MAO activity	MAO-A mRNA $2^{-\Delta\Delta C_t}$ ^a
MnB	-	0.11 (160)	0.19* (160)	0.44* (20)
PbB	0.11 (160)	-	-0.05 (160)	0.15 (20)
CdB	-0.10 (160)	0.08 (160)	-0.12 (160)	-0.02 (20)

Pearson r (n)

^aSpearman r (n)

* p=0.05

Table 4: Correlation matrix for metals in cord blood and MAO activity
(nmol 4-HOQ/g of protein, log transformed) in placenta

	MnB	PbB	MAO activity	MAO-A mRNA $2^{-\Delta\Delta C_t}$ ^a
MnB	-	0.21** (159)	0.20* (159)	0.50* (20)
PbB	0.21** (159)	-	-0.16* (159)	0.05 (20)
CdB	-0.16* (159)	0.14 (159)	-0.20* (159)	-0.14 (20)

Pearson r (n)

^aSpearman r (n)

* p<0.05

** p<0.01

Table 5: Mother – cord correlations for metals (n=157)

	Maternal PbB	Maternal CdB	Maternal MnB
Cord PbB			
Pearson R	0.41	-0.01	0.09
p	<0.0001	NS	NS
Cord CdB			
Pearson R	0.04	0.25	-0.19
p	NS	0.001	0.02
Cord MnB			
Pearson R	0.09	-0.11	0.33
p	NS	NS	<0.0001

Table 6: Monoamine oxidase activity (nmol 4-HOQ/g of protein, log transformed) in placenta in relation to maternal and cord metals concentrations ($\mu\text{g/L}$) in all subjects

	Slope estimate \pm St Error	t	p	Model R ²
Cord blood metals				11%
Mn	0.006 \pm 0.001	3.00	0.003	
Pb (log transformed)	-0.25 \pm 0.09	-2.62	0.01	
Cd (log transformed)	-0.12 \pm 0.09	-1.31	0.19	
Maternal blood metals				4%
Mn	0.01 \pm 0.006	2.38	0.02	
Pb (log transformed)	-0.13 \pm 0.11	-1.21	0.23	
Cd	-0.02 \pm 0.06	-0.28	0.78	

Models adjusted for smoking during third trimester

Mercury concentrations were not included in the final analysis due to 16 subjects with missing values and low correlation with MAO activity.

Table 7: Correlation matrix for metals at delivery and MAO activity (nmol 4-HOQ/g of protein, log transformed) in placenta in subjects with high and low MAO activity

	MAO activity > 7.5 nmol/g of protein	MAO activity < 7.5 nmol/g of protein
Cord blood metals		
Mn	0.29* (74)	-0.004 (85)
Pb (log transformed)	-0.06 (74)	-0.12 (85)
Cd (log transformed)	-0.13 (74)	-0.21 [#] (85)
Maternal metals		
Mn	0.32** (76)	-0.008 (84)
Pb (log transformed)	0.05 (76)	-0.05 (84)
Cd	-0.15 (76)	-0.17 (84)
Maternal hair Hg	0.09 (70)	-0.26* (74)

Pearson r (n)

^aSpearman r (n)

* p<0.05

** p<0.01