

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

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► **To cite this version:**

Nadia Abdelouahab, Guy Huel, Alexander Suvorov, Bernard Foliguet, Valérie Goua, et al.. Monoamine oxidase activity in placenta in relation to manganese, cadmium, lead, and mercury at delivery.. Neurotoxicol. Teratol., 2009, 32 (2), pp.256-61. <10.1016/j.ntt.2009.08.010>. <inserm-00422145>

**HAL Id: inserm-00422145**

**<http://www.hal.inserm.fr/inserm-00422145>**

Submitted on 6 Oct 2009

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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<br>± SD | Interquartile<br>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 $2^{-\Delta\Delta C_t}$ <sup>a</sup> |
|-----|-------------|------------|--------------|---|
| 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)

<sup>a</sup>Spearman 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 $2^{-\Delta\Delta C_t}$ <sup>a</sup> |
|-----|--------------|--------------|--------------|---|
| 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)

<sup>a</sup>Spearman r (n)

\* p<0.05

\*\* p<0.01

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

|                 | Maternal PbB | Maternal CdB | Maternal MnB |
|-----------------|--------------|--------------|--------------|
| <b>Cord PbB</b> |              |              |              |
| Pearson R       | 0.41         | -0.01        | 0.09         |
| p               | <0.0001      | NS           | NS           |
| <b>Cord CdB</b> |              |              |              |
| Pearson R       | 0.04         | 0.25         | -0.19        |
| p               | NS           | 0.001        | 0.02         |
| <b>Cord MnB</b> |              |              |              |
| 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 <sup>2</sup> |
|-----------------------|-------------------------------|-------|-------|----------------------|
| 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<br>> 7.5 nmol/g of protein | MAO activity<br>< 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 <sup>#</sup> (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)

<sup>a</sup>Spearman r (n)

\* p<0.05

\*\* p<0.01