



LITHIUM AND LACTATION

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BACKGROUND

- Use of lithium during lactation has been categorically discouraged despite a lack of data concerning potential risks to neonates or benefits to their mothers.
- Current American Academy of Pediatrics guidelines advise use of lithium with caution during breastfeeding and recommend monitoring serum lithium concentration in the infant.
- However, levels of exposure to lithium and attendant potential risks in infants nursed by mothers taking lithium has not been adequately quantified.

STUDY OBJECTIVES

1. To evaluate associations among concentrations of lithium in maternal serum, breastmilk, and infant serum.
2. To consider potential renal and thyroid dysfunction in lithium-exposed infants.

METHODS

- Samples of maternal serum, breastmilk and infant serum were collected from 10 mother-infant pairs.
- Baseline samples were obtained 4-12 weeks postpartum and within 12 hours after a dose of lithium.
- Repeat samples were collected from 5 subjects, and the data were averaged.

RESULTS

Table 1. Average maternal lithium dose, serum and milk concentrations, and infant serum concentrations.

Measure	Mean ± SD [Range]
Maternal dose (mg/day)	850 ± 220 [600-1200]
Maternal serum [Li] (mEq/L)	0.76 ± 0.29 [0.41-1.31]
Maternal milk [Li] (mEq/L)	0.35 ± 0.09 [0.19-0.48]
Infant serum [Li] (mEq/L)	0.16 ± 0.06 [0.09-0.26]

Figure 1. Mean (±SD) lithium levels in maternal serum, breastmilk, and infant serum (N=10 mother-infant pairs).

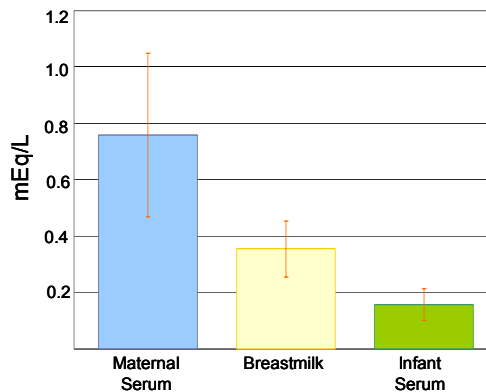
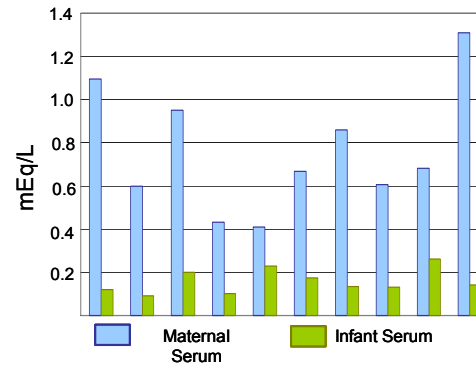


Table 2. Ratio of lithium levels in milk to maternal serum to infant serum.

Measure	Ratio % ± SD
Milk/Maternal serum	50.7% ± 16.0%
Infant serum/Milk	48.3% ± 26.0%
Infant serum/Maternal serum	23.5% ± 14.2%

Figure 2. Lithium levels in maternal serum and infant serum (N=10 mother-infant pairs).



- There were no adverse effects in 9/10 infants.
- One infant had an elevated TSH (7.31) that normalized within 2 weeks after lithium was discontinued. All other infant serum TSH levels remained within normal limits (mean: 2.07 ± 1.33).
- Infant renal function remained within normal limits for BUN (mean: 5.82 ± 1.56, range: 3.00–9.00 µg/dL); creatinine (mean: 0.28 ± 0.07, range: 0.20–0.40 µg/dL).
- No other acute adverse effects or later developmental abnormalities were observed or reported.

CONCLUSIONS

- This is the largest systematic study to quantify lithium levels in infant and maternal serum and breast milk.
- Infant serum lithium concentration averaged about one-quarter of maternal levels, compared to a previous estimate of 43% [Chaudron 2000].
- Adverse clinical effects in infants exposed to lithium through breast milk were rare and clinically nonsignificant.
- The findings suggest a tentative “rule of halves” for lithium: *Milk contains about half of the maternal serum concentration of lithium, and infant serum contains about half that in maternal milk, so that lithium in infant serum is about one-quarter of maternal serum.*
- Close clinical monitoring of infants exposed to lithium through breast-milk is recommended, with serum assays of infant lithium, BUN, and creatinine drawn every 6–8 weeks during breastfeeding.

REFERENCES

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