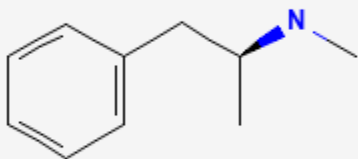




Methamphetamine

Revised: April 15, 2023.

CASRN: 537-46-2



Drug Levels and Effects

Summary of Use during Lactation

Because there is no published experience with methamphetamine as a therapeutic agent during breastfeeding, an alternate drug may be preferred, especially while nursing a newborn or preterm infant. One expert recommends that amphetamines not be used therapeutically in nursing mothers.[1]

Methamphetamine should not be used as a recreational drug by nursing mothers because it may impair their judgment and childcare abilities. Methamphetamine and its metabolite, amphetamine, are detectable in breastmilk and infant's serum after abuse of methamphetamine by nursing mothers. However, these data are from random collections rather than controlled studies because of ethical considerations in administering recreational methamphetamine to nursing mothers. Other factors to consider are the possibility of positive urine

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tests in breastfed infants which might have legal implications, and the possibility of other harmful contaminants in street drugs. Breastfeeding is generally discouraged in mothers who are actively abusing amphetamines.[2-5] In mothers who abuse methamphetamine while nursing, withholding breastfeeding for 48 to 100 hours after the maternal use been recommended, although in many mothers methamphetamine is undetectable in breastmilk after an average of 72 hours from the last use.[6,7] It has been suggested that breastfeeding can be reinstated 24 hours after a negative maternal urine screen for amphetamines.[7]

Drug Levels

Methamphetamine is metabolized to several metabolites, including the active metabolite, amphetamine.

Maternal Levels. Two nursing mothers who were intravenous methamphetamine abusers collected milk samples just before methamphetamine injection and every 2 to 6 hours after injection for 24 hours. Because the drugs were illicit street drugs, the doses of methamphetamine were not known. Peak and average milk methamphetamine concentrations were about 160 mcg/L and 111 mcg/L in one woman and 610 mcg/L and 281 mcg/L in the other, respectively. Milk methamphetamine concentrations fell with half-lives of 13.6 and 7.4 hours, respectively. Amphetamine, thought to be derived from metabolism of methamphetamine, was present in relatively constant concentrations in the milk of both mothers, averaging 4 and 15 mcg/L, respectively. The authors estimated that the infants would have received daily dosages of 16.7 and 42.2 mcg/kg of methamphetamine and 0.8 and 2.5 mcg/kg of amphetamine, respectively.[6] These estimated mg/kg infant doses of methamphetamine are lower than therapeutic doses of the equipotent dextroamphetamine for older children with attention deficit hyperactivity disorder. However, this is not evidence of safety for breastfed infants because the data on these two women cannot be extrapolated to other methamphetamine abusers.

Thirty-three mothers in Thailand were identified who had predelivery urine drug screens positive for methamphetamine. On average they used methamphetamine 2.4 times per week, primarily by smoking crushed tablets. Of these, 22 had undetectable postpartum methamphetamine milk levels. Of the 11 mothers with methamphetamine in breastmilk, only two mothers had more than 1 consecutive milk samples containing methamphetamine that were analyzed. The mothers had smoked methamphetamine (dosage uncertain) 53 and 68 hours prior to delivery, respectively. First milk samples contained 142 and 345 mcg/L of methamphetamine in the two mothers. The half-lives of methamphetamine in breastmilk were 11.3 and 40.3 hours, respectively. The authors estimated that in the first 24 hours after birth their exclusively breastfed infant would have received daily dosages of 59.3 mcg or 21.3 mcg/kg in the first case and 93.0 mcg or 51.7 mcg/kg in the second case, although the authors used an unrealistically high milk intake for a 1-day-old infant to estimate the dose.

Methamphetamine became undetectable in breastmilk about 100 hours after the last drug use in both mothers, which was about one day prior to the mothers' urine becoming negative for methamphetamine.[7]

Milk from 2 mothers suspected of methamphetamine abuse were analyzed by 5 different methods. In one sample, the average methamphetamine concentration was 327 mcg/L (range 294 to 347 mcg/L) and the average amphetamine concentration was 79.9 mcg/L (range 74.9 to 88.4 mcg/L). In the second sample, the average methamphetamine concentration from 3 of the methods was 3.8 mcg/L (range 3.4 to 4.1 mcg/L) and the average amphetamine concentration from 2 of the methods was 1 mcg/L. The other methods did not detect the drugs.[8]

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

A 2-month-old infant whose mother used illicit street methamphetamine recreationally by nasal inhalation was found dead 8 hours after a small amount of breastfeeding and ingestion of 120 to 180 mL of formula. The infant's serum methamphetamine concentration on autopsy was 39 mcg/L. Although the infant's mother was convicted of child endangerment for the use of methamphetamine during breastfeeding, the role that methamphetamine

played in the infant's death has been questioned because of the low infant serum methamphetamine concentration and the mother's alleged minimal breastfeeding.[9,10]

South Australian government pathologists reported the death of a breastfed infant who was co-sleeping with its mother. Methamphetamine was found in a “significant” concentration in the infant on autopsy and the drug in breastmilk was thought to be potentially contributory to the death. These authors also reported that in prior deaths of infants under 12 months of age, detectable methamphetamine and its metabolite, amphetamine, may have been partially obtained via breastmilk.[11] Pathologists from the New Zealand government confirmed similar findings in their country.[12]

Effects on Lactation and Breastmilk

A single oral dose of 0.2 mg/kg to a maximum of 17.5 mg of d-methamphetamine was given to 6 subjects (4 male and 2 female). Serum prolactin concentrations were unchanged over a period of 300 minutes after the dose. [13]

In 2 papers by the same authors, 20 women with normal physiologic hyperprolactinemia were studied on days 2 or 3 postpartum. Eight received dextroamphetamine 7.5 mg intravenously, 6 received 15 mg intravenously and 6 who served as controls received intravenous saline. The 7.5 mg dose reduced serum prolactin by 25 to 32% compared to control, but the difference was not statistically significant. The 15 mg dose significantly decreased serum prolactin by 30 to 37% at times after the infusion. No assessment of milk production was presented. The authors also quoted data from another study showing that a 20 mg oral dose of dextroamphetamine produced a sustained suppression of serum prolactin by 40% in postpartum women.[14,15]

A study compared 31 methamphetamine-dependent subject to 23 non-dependent subjects. The serum prolactin concentrations in the methamphetamine-dependent subjects were elevated at days 2 and 30 of abstinence. The elevation was greater in women than in men.[16] The maternal prolactin level in a mother with established lactation may not affect her ability to breastfeed.

In a retrospective Australian study, mothers who used intravenous amphetamines during pregnancy were less likely to be breastfeeding their newborn infants at discharge than mothers who abused other drugs (27% vs 42%). The cause of this difference was not determined.[17]

A prospective, multicenter study followed mothers who used methamphetamine prenatally (n = 204) to those who did not (n = 208). Infants exposed to methamphetamine exhibited poor suck, excessive suck and more jitteriness compared to nonexposed infants. Mothers who used methamphetamine were less likely to breastfeed their infants (38%) at hospital discharge than those who did not use methamphetamine (76%).[18]

Alternate Drugs to Consider

(ADHD) [Amphetamine](#), [Dextroamphetamine](#), [Lisdexamfetamine](#), [Methylphenidate](#)

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Substance Identification

Substance Name

Methamphetamine

CAS Registry Number

537-46-2

Drug Class

Breast Feeding

Lactation

Milk, Human

Street Drugs

Sympathomimetics

Dopamine Agents

Central Nervous System Stimulants

Adrenergic Agents

Wakefulness-Promoting Agents