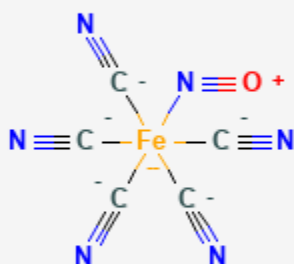




## Nitroprusside

Revised: June 21, 2021.

CASRN: 15078-28-1



## Drug Levels and Effects

### Summary of Use during Lactation

Breastmilk levels of nitroprusside sodium have not been measured after exogenous administration. Because of its short half-life of 2 minutes, it is unlikely to appear in breastmilk. However, its toxic metabolite, thiocyanate, is excreted into milk and can be directly toxic to the infant as well as inhibiting iodide transport into breastmilk. Cyanide is another toxic metabolite of nitroprusside that may enter breastmilk. An alternate drug is therefore preferred, during breastfeeding. If use of nitroprusside sodium is unavoidable, the mother should refrain from breastfeeding.

**Disclaimer:** Information presented in this database is not meant as a substitute for professional judgment. You should consult your healthcare provider for breastfeeding advice related to your particular situation. The U.S. government does not warrant or assume any liability or responsibility for the accuracy or completeness of the information on this Site.

**Attribution Statement:** LactMed is a registered trademark of the U.S. Department of Health and Human Services.

## Drug Levels

Nitroprusside is converted with a half-life of about 2 minutes to cyanide and then to thiocyanate in the body. Both of these metabolites have longer half-lives: 7.3 hours for cyanide and an estimated 3 days to 2 weeks for thiocyanate.[1]

*Maternal Levels.* An older study found that thiocyanate passed into human breastmilk in concentrations from 27% to 50% of maternal serum levels.[2] A later study found milk levels to range from 16% to 42% of maternal plasma levels.[3] A 2004 study found values ranging from 42% to 82%,[1] while a more recent study reported fractional excretion of thiocyanate that ranged between 1.4-14.4%.[4]

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

## Effects in Breastfed Infants

Several studies have found that breastmilk iodine levels are inversely related to the mothers' blood thiocyanate levels, probably through inhibition of the Na/I symporter by thiocyanate.[5-8] However, a recent study failed to demonstrate such a correlation. The authors felt that the effect of thiocyanate on iodine transport may be less pronounced than previously reported.[4] These low breastmilk iodine levels might pose a risk of hypothyroidism to breastfed infants whose mothers have low iodine intake.[4-8]

## Effects on Lactation and Breastmilk

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

## Alternate Drugs to Consider

Enalapril, Hydralazine, Hydrochlorothiazide, Methyldopa, Propranolol

## References

1. Dorea JG. Maternal thiocyanate and thyroid status during breast-feeding. *J Am Coll Nutr.* 2004;23:97–101. PubMed PMID: 15047674.
2. Funderburk CF, Van Middlesworth L. Effect of lactation and perchlorate on thiocyanate metabolism. *Am J Physiol.* 1967;213:1371–7. PubMed PMID: 4294711.
3. Meberg A, Sande H, Foss OP, et al. Smoking during pregnancy--effects on the fetus and on thiocyanate levels in mother and baby. *Acta Paediatr Scand.* 1979;68:547–52. PubMed PMID: 463536.
4. Dasgupta PK, Kirk AB, Dyke JV, et al. Intake of iodine and perchlorate and excretion in human milk. *Environ Sci Technol.* 2008;42:8115–21. PubMed PMID: 19031911.
5. Vanderpas J, Rivera MT, Berquist H, et al. Thiocyanate overload decreases iodine supply in iodine-deficient breast-fed infants. *Horm Res.* 2007;68 Suppl. 3:53–4. PubMed PMID: 17228181.
6. Leung AM, Braverman LE, He X, et al. Environmental perchlorate and thiocyanate exposures and infant serum thyroid function. *Thyroid.* 2012;22:938–43. PubMed PMID: 22827469.
7. Laurberg P, Nohr SB, Pedersen KM, et al. Iodine nutrition in breast-fed infants is impaired by maternal smoking. *J Clin Endocrinol Metab.* 2004;89:181–7. PubMed PMID: 14715847.
8. Kirk AB, Dyke JV, Martin CF, et al. Temporal patterns in perchlorate, thiocyanate, and iodide excretion in human milk. *Environ Health Perspect.* 2007;115:182–6. PubMed PMID: 17384762.

## **Substance Identification**

### **Substance Name**

Nitroprusside

### **CAS Registry Number**

15078-28-1

### **Drug Class**

Breast Feeding

Lactation

Antihypertensive Agents

Vasodilator Agents