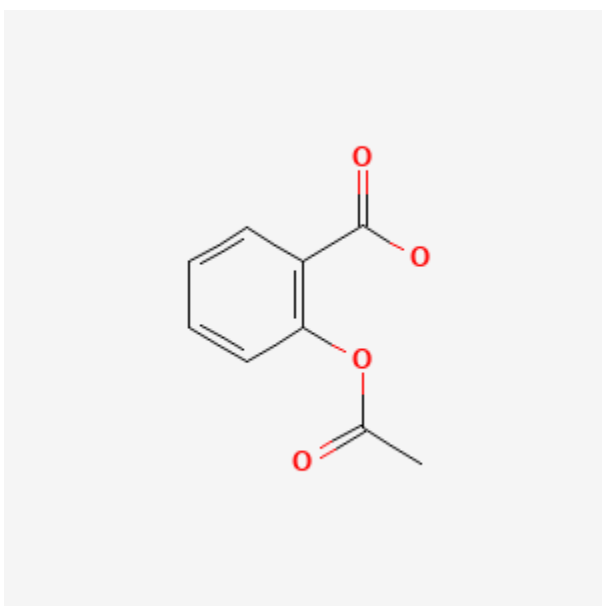




Aspirin

Revised: September 20, 2021.

CASRN: 50-78-2



Drug Levels and Effects

Summary of Use during Lactation

After aspirin ingestion, salicylic acid is excreted into breastmilk, with higher doses resulting in disproportionately higher milk levels. Long-term, high-dose maternal aspirin ingestion probably caused metabolic acidosis in one breastfed infant. Reye's syndrome is associated with aspirin administration to infants with viral infections, but the risk of Reye's syndrome from salicylate in breastmilk is unknown. An alternate drug is preferred over continuous high-dose, aspirin therapy. After daily low-dose aspirin (75 to 325 mg daily), no aspirin is excreted into breastmilk and salicylate levels are low. Daily low-dose aspirin therapy may be considered as an antiplatelet drug for use in breastfeeding women.[1-3] If it is used by a nursing mother, monitor the infant for bruising and bleeding.

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.

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Drug Levels

Aspirin is rapidly metabolized to salicylate after ingestion, so most studies have measured salicylate levels in breastmilk after aspirin administration to the mother; however, some studies have not measured salicylate metabolites in breastmilk that may be hydrolyzed in the infant's gut and absorbed as salicylate.[4]

Maternal Levels. A woman taking aspirin 4 grams daily for rheumatoid arthritis was nursing her 5 kg infant (age not reported). Salicylate was not detectable (< 50 mg/L) in breastmilk with the relative insensitive assay used.[5]

Six nursing mothers who were 2 to 8 months postpartum (average 5 months) were given aspirin doses of 500, 1000 and 1500 mg of aspirin orally on 3 separate occasions. Peak breastmilk salicylate levels were 5.8 mg/L, 15.8 mg/L, and 38.8 mg/L, respectively. The time of the peak levels occurred between 2 and 6 hours after ingestion, with little variation in levels over time. The disproportionate increase in milk levels as the dose increased was attributed to nonlinear metabolism and protein binding.[6]

Milk and blood levels of salicylate and its metabolites were determined in 8 lactating women following oral administration of 1 gram of aspirin. Peak salicylic acid milk levels averaging 2.4 mg/L occurred 3 hours after the dose. Milk contents of salicyluric acid were greater than those of salicylic acid; a mean peak level of 10.2 mg/L was reached after 9 hours and the average level was 4.4 mg/L at 24 hours after the dose. Total salicylate and metabolite levels were 5.1 mg/L at 3 hours, 9.9 mg/L at 6 hours, 11.2 mg/L at 9 hours and 10.2 mg/L at 12 hours after the dose. Acid labile conjugates were less than 0.2 mg/L.[7] Using an average salicylate plus salicyluric acid level over the first 12 hours, a fully breastfed infant would receive an average of 9.4% of the maternal weight-adjusted dosage.

Two women given aspirin 454 mg orally had peak salicylate milk levels of about 1 mg/L at 1 hour after the dose. The authors estimated that about 0.1% of the mothers' total dose would appear in breastmilk in 48 hours.[8] However, salicylate metabolites were not measured in milk.

A woman who was breastfeeding a 4-month-old was taking long-term aspirin therapy in dosages ranging from 2 to 5.9 grams daily. During this therapy, milk was obtained 4 hours after a 650 mg dose and just before taking a dose of 975 mg. The trough milk salicylate level was 2 mg/L and a peak level of 10 mg/L occurred 3 hours after the dose. Salicylate levels ranged from 4 to 7 mg/L over the 5 hours after the peak.[9] Using the peak level from this study, a fully breastfed infant would receive about 10% of the maternal weight-adjusted dosage of salicylate. The assay method used should have measured both salicylate and metabolites in milk.

Seven nursing mothers between 1 and 8 months postpartum were taking enteric-coated aspirin daily; six took 81 mg and one took 325 mg. Aliquots of a complete collection of milk from both breasts were analyzed for aspirin and salicylic acid 6 times over the following 24-hour period. Aspirin was undetectable (<0.61 mcg/L) in all samples. In mothers taking 81 mg of aspirin daily, the peak salicylate concentration in milk was 115 mcg/L at 2 to 4 hours after the dose and the average milk concentration was 24 mcg/L. In the woman taking 325 mg of aspirin, the peak milk salicylate concentration was 745 mcg/L at 1 hour after the dose and the average salicylate concentration was 107.4 mcg/L. The authors calculated a weight-adjusted infant salicylate dosage of 0.4%.[3]

Infant Levels. A 9-week-old infant who was born at 36 weeks gestation was receiving about 50% breastmilk and 50% formula. The infant's mother was taking 2.4 grams of aspirin daily and the infant's serum contained 65 mg/L of salicylate.[10]

A 16-day-old infant developed metabolic acidosis with a salicylate serum level of 240 mg/L and salicylate metabolites in the urine. The possibility of direct administration to the infant could not be ruled out.[11]

Effects in Breastfed Infants

One case report of metabolic acidosis was caused by salicylate in a 16-day old breastfed infant whose mother was taking aspirin 650 mg every 4 hours for arthritis.[11] However, there was no measurement of salicylate in maternal serum or milk and it is unclear whether the infant had received any salicylate directly.

Thrombocytopenia, fever, anorexia and petechiae occurred in a 5-month-old breastfed infant 5 days after her mother started taking aspirin for fever. One week after recovery, the infant was given a single dose of aspirin 125 mg and the platelet count dropped once again. The original symptoms were probably caused by aspirin or salicylate in breastmilk.[12]

Hemolysis after aspirin and phenacetin taken by the mother of a 23-day-old, glucose-6-phosphate dehydrogenase (G6PD) deficient infant was possibly due to aspirin in breastmilk.[13]

In a telephone follow-up study, mothers reported no side effects among 15 infants exposed to aspirin (dosages and infant ages were unspecified) in breastmilk.[14]

Effects on Lactation and Breastmilk

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

Alternate Drugs to Consider

Acetaminophen, Ibuprofen

References

1. Bell AD, Roussin A, Cartier R, et al. The use of antiplatelet therapy in the outpatient setting: Canadian Cardiovascular Society guidelines executive summary. *Can J Cardiol*. 2011;27:208–21. PubMed PMID: 21459270.
2. Bates SM, Greer IA, Middeldorp S, et al. VTE, thrombophilia, antithrombotic therapy, and pregnancy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest* 2012;141 (2 Suppl):e691S-736S. PMID: 22315276
3. Datta P, Rewers-Felkins K, Kalleem RR, et al. Transfer of low dose aspirin into human milk. *J Hum Lact*. 2017;33:296–9. PubMed PMID: 28418802.
4. Levy G. Salicylate pharmacokinetics in the human neonate. In, Morselli PL, Garattini S, Sereni F, eds. *Basic and therapeutic aspects of perinatal pharmacology* 1975;Raven Press:New York:319-30.
5. Erickson SH, Oppenheim GL. Aspirin in breast milk. *J Fam Pract*. 1979;8:189–90. PubMed PMID: 759544.
6. Jamali F, Keshavarz E. Salicylate excretion in breast milk. *Int J Pharm*. 1981;8:285–90. doi: [10.1016/0378-5173\(81\)90068-5](https://doi.org/10.1016/0378-5173(81)90068-5).
7. Pütter J, Satravaha P, Stockhausen H. Quantitative analysis of the main metabolites of acetylsalicylic acid. Comparative analysis in the blood and milk of lactating women. *Z Geburtshilfe Perinatol*. 1974;178:135–8. PubMed PMID: 4422623.
8. Findlay JW, DeAngelis RL, Kearney MF, et al. Analgesic drugs in breast milk and plasma. *Clin Pharmacol Ther*. 1981;29:625–33. PubMed PMID: 7214793.
9. Bailey DN, Welbert RT, Naylor A. A study of salicylate and caffeine excretion in the breast milk of two nursing mothers. *J Anal Toxicol*. 1982;6:64–8. PubMed PMID: 7098450.
10. Unsworth J, d'Assis-Fonseca A, Beswick DT. Serum salicylate levels in a breast fed infant. *Ann Rheum Dis*. 1987;46:638–9. PubMed PMID: 3662653.
11. Clark JH, Wilson WG. A. 16-day-old breast-fed infant with metabolic acidosis caused by salicylate. *Clin Pediatr (Phila)*. 1981;20:53–4. PubMed PMID: 7449246.

12. Terragna A, Spirito L. *Minerva Pediatr.* 1967;19:613–6. [Thrombocytopenic purpura in an infant after administration of acetylsalicylic acid to the wet-nurse]. PubMed PMID: 6069440.
13. Harley JD, Robin H. "Late" neonatal jaundice in infants with glucose-6-phosphate dehydrogenase-deficient erythrocytes. *Australas Ann Med.* 1962;11:148–55. PubMed PMID: 13960788.
14. Ito S, Blajchman A, Stephenson M, et al. Prospective follow-up of adverse reactions in breast-fed infants exposed to maternal medication. *Am J Obstet Gynecol.* 1993;168:1393–9. PubMed PMID: 8498418.

Substance Identification

Substance Name

Aspirin

CAS Registry Number

50-78-2

Drug Class

Breast Feeding

Lactation

Analgesic Agents

Nonsteroidal Antiinflammatory Agents

Platelet Aggregation Inhibitors