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# Willow Bark

Revised: December 3, 2018.

## Drug Levels and Effects

### Summary of Use during Lactation

Willow (Salix sp.) bark contains salicylic acid and its derivative salicin. Willow bark has no specific lactation-related uses. It is traditionally used to treat fever and inflammatory conditions, but it also is found in some weight loss products. After salicylate or salicin ingestion, salicylic acid is excreted into breastmilk. The excretion of salicylate into breastmilk increases disproportionately as the maternal dosage increases. 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. Willow bark is best avoided during breastfeeding. Safer drugs are available for pain and fever.

Dietary supplements do not require extensive pre-marketing approval from the U.S. Food and Drug Administration. Manufacturers are responsible to ensure the safety, but do not need to *prove* the safety and effectiveness of dietary supplements before they are marketed. Dietary supplements may contain multiple ingredients, and differences are often found between labeled and actual ingredients or their amounts. A manufacturer may contract with an independent organization to verify the quality of a product or its ingredients, but that does *not* certify the safety or effectiveness of a product. Because of the above issues, clinical testing results on one product may not be applicable to other products. More detailed information about dietary supplements is available elsewhere on the LactMed Web site.

### Drug Levels

Milk levels have not been measured after maternal ingestion of willow bark or salicin, but have been measured after aspirin and sodium salicylate ingestion. All of these products result in salicylic acid in the blood and milk; however, some studies have not measured salicylate metabolites in breastmilk that may be hydrolyzed in the infant's gut and absorbed as salicylate.[1]

*Maternal Levels.* Milk and blood levels of the salicylate metabolites of aspirin were determined in 8 lactating women following oral administration of 1 g 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 averaged 4.4 mg/L 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.[2] Using an average salicylate plus salicylurate level over the first 12 hours, a fully breastfed infant would receive an average of 9.4% of the maternal weight-adjusted dosage.

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. Salicylate metabolites were not measured. The time of the peak salicylate 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.[3]

Two women given aspirin 454 mg orally had peak salicylate milk levels of about 1 mg/L 1 hour after the dose. The authors estimated that about 0.1% of the mothers' total dose would appear in breastmilk in 48 hours.[4] 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 g 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.[5] 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.

*Infant Levels.* Four nursing mothers were given oral sodium salicylate in a dose of 20 mg/kg. Their exclusively breastfed infants ranged from 23 to 43 days of age. The infants' urine was collected until salicylate excretion was complete and found to contain 0.18 to 0.36% of the maternal dose, primarily as salicyluric acid.[1]

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 g of aspirin daily and the infant's serum contained 65 mg/L of salicylate.[6]

## Effects in Breastfed Infants

A 16-day-old breastfed infant developed metabolic acidosis with a salicylate serum level of 240 mg/L and salicylate metabolites in the urine. The mother was taking 3.9 g/day of aspirin for arthritis, and salicylate in breastmilk probably caused the infant's illness, but the possibility of direct administration to the infant could not be ruled out.[7]

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 125 mg dose of aspirin and the platelet count dropped once again. The original symptoms were probably caused by salicylate in breastmilk.[8]

## Effects on Lactation and Breastmilk

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

## Alternate Drugs to Consider

(Fever, Pain) Acetaminophen, Ibuprofen

## References

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# Substance Identification

## Substance Name

Willow Bark

## Scientific Name

Salix sp.

## Drug Class

Breast Feeding

Lactation

Complementary Therapies

Phytotherapy

Plants, Medicinal