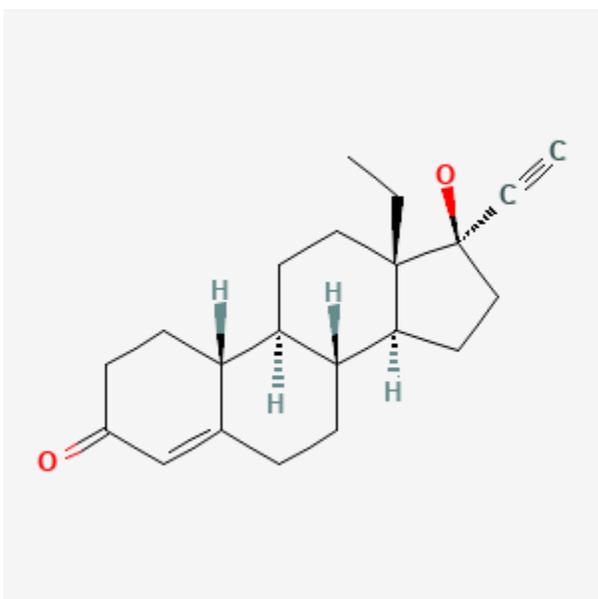




## Levonorgestrel Implant

Revised: September 15, 2023.

CASRN: 797-63-7



## Drug Levels and Effects

### Summary of Use during Lactation

This record contains information specific to the levonorgestrel implant, which is not available in the United States. Although nonhormonal methods are preferred during breastfeeding, progestin-only contraceptives such as levonorgestrel are considered the hormonal contraceptives of choice during lactation. Fair quality evidence indicates that levonorgestrel does not adversely affect the composition of milk, the growth and development of the infant. Expert opinion holds that the risks of progestin-only contraceptive products usually are acceptable for nursing mothers at any time postpartum.[1-5] Limited, low quality evidence indicates that there is no difference in breastfeeding rates at 6 and 12 months between immediate and delayed insertion of progestin-containing contraceptive implants.[6] Some evidence indicates that progestin-only contraceptives may offer protection against bone mineral density loss during lactation, or at least do not exacerbate it.[7-9]

**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

Levonorgestrel is a synthetic progestin that is the active isomer of the racemate norgestrel. It is considered to be twice as potent on a weight basis as the racemic mixture.

*Maternal Levels.* One hundred women who received Norplant implants at an average of day 55 postpartum were compared to 100 women receiving a postpartum nonhormonal IUD. Milk levonorgestrel levels were measured at various times after insertion. During days 1 to 4 postinsertion, average milk levels were 0.079 mcg/L (n = 5); during days 9 to 14, average levels were 0.128 mcg/L (n = 22); during days 16 to 22, average levels were 0.163 mcg/L (n = 3); and during days 34 to 40, average levels were 0.116 mcg/L (n = 21). The authors estimated that a fully breastfed infant would receive a levonorgestrel dosage of 15 to 18 ng/kg daily in breastmilk during this time period.[10]

A study compared women who received Norplant-2 (n = 14), an IUD that released 20 mcg levonorgestrel daily (n = 14) or oral tablets containing 30 mcg of levonorgestrel (n = 10) at 4 to 6 weeks postpartum. Pooled fore- and hindmilk samples were measured several times on the first day of drug use and periodically thereafter until day 28. Norplant-2 users had milk levels that reached an average of 0.067 mcg/L by day 2 and maintained those levels throughout the 28 days. IUD users had milk levels that reached an average of 0.046 mcg/L by day 2 and maintained those levels throughout the 28 days. Oral tablet users had 2-hour peak milk levels that averaged 0.05 mcg/L throughout the 28 days.[11]

*Infant Levels.* Forty-two women received Norplant implants between days 30 and 40 postpartum. The women breastfed for 1 year and donated 1 blood sample from herself and her infant once during the year. Infant serum levels averaged 1.5 mcg/L during the first month postpartum (n = 10); 3.95 mcg/L during the third month postpartum (n = 3); 4.2 mcg/L during the sixth month postpartum (n = 12); 2.5 mcg/L during the ninth month postpartum (n = 8); and 3.6 mcg/L during the twelfth month postpartum (n = 11). Overall, the infants' serum levonorgestrel levels averaged 9.9% (range 4.9 to 12.6%) of simultaneous maternal serum levels.[12]

A study compared women who received levonorgestrel as a contraceptive via Norplant-2 (n = 14), an IUD that released 20 mcg daily (n = 14) or oral tablets containing 30 mcg of levonorgestrel (n = 10) at 4 to 6 weeks postpartum. The serum levels of infants averaged 0.046 mcg/L in infants whose mothers used Norplant-2. Infant serum levels averaged 2.9 to 4.6%, of maternal serum levels with Norplant-2.[11]

## Effects in Breastfed Infants

Numerous studies have found no systematic differences in growth, development or illness rates between the infants of mothers who received Norplant as a contraceptive and those of other mothers receiving either no contraception or nonhormonal contraception.[10,13-17] One study found serum thyroid stimulating hormone levels to be lower in the infants exposed to levonorgestrel than in control infants.[18]

Ten women received Norplant-2 beginning at 4 weeks postpartum. Mothers collected 4-hour urine samples daily from weeks 4 to 11 postpartum from their infants. Urine samples were analyzed for follicle-stimulating hormone, luteinizing hormone and testosterone. No difference was found in these levels when compared to those of infants whose mothers were taking either no contraception or an oral progestin-only contraceptive containing 30 mcg of levonorgestrel.[19]

Multicenter, nonrandomized studies followed infants whose mothers received levonorgestrel contraception during breastfeeding, either as oral tablets of 37.5 mcg daily (n = 246) or as Norplant (n = 453). No adverse effects on infant growth through the first year were found in comparison to standard measurements.[20,21] In a continuation study, infants from these studies who were exposed to levonorgestrel via Norplant (total n = 220) were followed up to 6 years of age. Infants were fully breastfed for an average of 7.8 months and were breastfed at least once daily for an average of 16.5 months. No differences in growth, diseases, surgery or hospitalizations

were found from years 2 through 6 between infants whose mothers used levonorgestrel implants or Copper T IUD. An increase in skin conditions occurred in the levonorgestrel group and an increase in urogenital conditions occurred in the Copper T group.[17]

## Effects on Lactation and Breastmilk

Numerous studies of varying size and quality have found that the use of levonorgestrel implants (Norplant or Norplant-2) as a contraceptive beginning at 7 days postpartum or later either has no clinically important negative effect on the quality of breastmilk and results in either no effect or an increase in the milk supply and duration of lactation.[14,16,22-26]

In a nonrandomized study, 100 women who received Norplant implants at an average of day 55 postpartum were compared to 100 women receiving a postpartum IUD. No differences were found between the control and Norplant groups in the number of women nursing at days 10 and 20 and months 1 to 12 postinsertion except a slight decrease in the number of mothers using Norplant who were exclusively breastfeeding at 12 months. No difference since the time of weaning was noted between the groups.[10]

A secondary analysis of a study in Uganda examined 96 postpartum women randomized to receive a 2-rod levonorgestrel implant (Jadelle, Bayer AG, Berlin) either within 5 days of birth (n = 55) or at 6 to 8 weeks postpartum (n = 42). No differences were found between the groups in infant growth from birth to 6 months, time to lactogenesis II, or proportion of mothers breastfeeding at 3 and 6 months.[27]

A study in Malawi compared the breastfeeding rates between women who received an etonogestrel (n = 28) or levonorgestrel (n= 112) implant immediately postpartum. Mothers chose the method and were followed for 2 years postpartum. Most women breastfed for 2 years. No difference was seen in the exclusive breastfeeding rate at 6 months between the groups nor in the continuation of breastfeeding to 2 years.[28]

## Alternate Drugs to Consider

Etonogestrel, Intrauterine Copper Contraceptive, Medroxyprogesterone Acetate, Norethindrone

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## Substance Identification

### Substance Name

Levonorgestrel Implant

### CAS Registry Number

797-63-7

### Drug Class

Breast Feeding

Lactation

Milk, Human

Contraceptive Agents, Female