

# Leuprorelin (Leuprolide) Overview

## Overview:

Leuprorelin is a synthetic gonadotropin-releasing hormone (GnRH) agonist used in hormone-related disorders. It is commonly used to treat prostate cancer, endometriosis, and precocious puberty by regulating sex hormone production.

## Mechanism of Action:

### GnRH Receptor Binding:

Leuprorelin binds to GnRH receptors in the anterior pituitary gland.

### Initial Stimulation:

It temporarily increases the release of luteinizing hormone (LH) and follicle-stimulating hormone (FSH).

### Chronic Desensitization:

Continuous exposure downregulates GnRH receptors, leading to decreased LH and FSH, ultimately reducing testosterone and estrogen production.

## Physiological Functions in the Body:

Suppresses Sex Hormone Levels: Reduces testosterone in men and estrogen in women.

Prostate Cancer Treatment: Limits testosterone-driven tumor growth.

Endometriosis and Uterine Fibroids: Reduces estrogen levels to slow tissue growth.

Precocious Puberty: Delays early sexual development by lowering gonadotropins.

## Clinical Use:

### FDA-Approved Indications:

1. Prostate cancer (palliative)
2. Endometriosis
3. Uterine fibroids (pre-surgical)
4. Precocious puberty

### Administration:

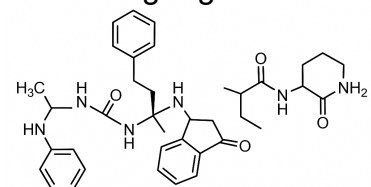
Subcutaneous or intramuscular injection (monthly or quarterly depot formulations).

### Dosing (FDA-Approved):

- Prostate Cancer:  
7.5 mg IM monthly or 22.5–45 mg every 3–6 months.
- Endometriosis/Uterine Fibroids:  
3.75 mg IM monthly or 11.25 mg every 3 months (usually 6-month limit).
- Precocious Puberty:  
Dose based on body weight and pubertal progression (IM depot formulation).

## Conclusion:

Leuprorelin is a powerful GnRH agonist that modulates sex hormone production, with therapeutic applications in cancer, reproductive health, and puberty control. Its versatile dosing regimens and well-documented efficacy make it a key option in hormonal therapies.



**LEUPRORELIN**