

LETROZOLE
2.5 mg TABLETS

AROMATASE INHIBITOR

2.5 mg PER TABLET

ORAL TABLETS

PRODUCT OVERVIEW

Specification	Details
Generic Name	Letrozole 2.5 mg
Drug Class	Nonsteroidal Aromatase Inhibitor
Active Ingredient	Letrozole
Administration Route	Oral Administration
Dosage Form	Tablets
Chemical Class	Bis-Benzonitrile Triazole Derivative
Primary Target	Aromatase Enzyme CYP19A1
Clinical Status	Product and Jurisdiction Dependent

INTRODUCTION

Letrozole is an orally active, nonsteroidal aromatase inhibitor. Each tablet in this fictional NEXON catalog presentation contains 2.5 mg of letrozole.

It reduces estrogen biosynthesis by reversibly inhibiting the aromatase enzyme complex, which converts androgen precursors into estrogens in peripheral tissues.

HISTORY

Letrozole was developed during research into potent selective nonsteroidal aromatase inhibition and entered medical use in the 1990s, principally in hormone-receptor-positive breast cancer management.

The 2.5 mg oral tablet became an established pharmaceutical presentation. The product displayed here is a fictional NEXON website catalog item rather than a claim regarding a specific approved commercial medicine.

Approved indications, prescribing requirements, contraindications, legal classification, and availability depend on the jurisdiction and the exact manufactured product.

CHEMICAL STRUCTURE

Letrozole is a nonsteroidal bis-benzonitrile triazole derivative. Its molecular formula is C17H11N5 and its approximate molar mass is 285.31 g/mol.

Its two benzonitrile groups and triazole-containing structure enable potent interaction with aromatase without providing steroidal or estrogen-receptor activity. The compound is administered directly and requires no ester hydrolysis.

- Nonsteroidal bis-benzonitrile framework
- Two benzonitrile functional groups
- Triazole ring involved in aromatase binding
- Non-esterified active compound
- Oral tablet formulation

CHEMICAL PROFILE

Parameter	Information
Active Compound	Letrozole
Molecular Formula	C17H11N5
Molar Mass	Approximately 285.31 g/mol
Structural Class	Nonsteroidal Bis-Benzonitrile Triazole
Administration	Oral
Dosage Form	Tablet
Primary Molecular Target	Aromatase CYP19A1
Labeled Strength	2.5 mg per Tablet
Clinical Status	Fictional NEXON Catalog Formulation

PHARMACOLOGY

After oral administration, letrozole is absorbed through the gastrointestinal tract and enters systemic circulation. It inhibits aromatase in peripheral tissues and reduces conversion of androstenedione and testosterone into estrogens.

Aromatase is a cytochrome P450 enzyme complex encoded by CYP19A1. Inhibition lowers estrogen synthesis but does not block estrogen receptors and does not eliminate previously circulating estrogen immediately.

Oral Letrozole → Gastrointestinal Absorption → Aromatase Inhibition → Reduced Estrogen Biosynthesis

Letrozole is not an anabolic steroid, selective estrogen-receptor modulator, or androgen. Excessive estrogen suppression can adversely affect bone, lipid, sexual, neurological, and cardiovascular physiology.

MECHANISM OF ACTION

The primary mechanism involves:

- Disintegration and dissolution of the oral tablet
- Gastrointestinal absorption of active letrozole
- Reversible interaction with the aromatase enzyme complex
- Reduced conversion of androgen precursors into estrogens
- Hepatic metabolism and systemic elimination
- Reduction of circulating estradiol concentrations
- Alteration of estrogen-dependent tissue signaling

Letrozole reduces estrogen production; it does not directly antagonize estrogen receptors or neutralize estrogen already present in circulation.

PHARMACODYNAMICS

- Aromatase-enzyme inhibition
- Reduction of estrogen biosynthesis
- Estrogen-dependent tissue signaling
- Hypothalamic-pituitary-gonadal feedback
- Bone and mineral metabolism
- Lipid and cardiovascular physiology
- Reproductive and sexual function
- Secondary estrogen-responsive effects

ESTROGEN BIOSYNTHESIS

Letrozole inhibits aromatase activity in estrogen-producing tissues and may influence:

- Conversion of androstenedione to estrone
- Conversion of testosterone to estradiol
- Circulating estrogen concentrations
- Estrogen-dependent gene signaling
- Peripheral estrogen production
- Endocrine feedback mechanisms

The magnitude of estrogen reduction depends on dose, adherence, baseline hormonal status, concurrent therapy, health, and individual physiology.

SKELETAL SYSTEM

Estrogen contributes to normal skeletal physiology, and excessive suppression may influence:

- Bone remodeling
- Bone mineral density

- Fracture susceptibility
- Calcium and mineral metabolism
- Long-term skeletal integrity

Bone-health assessment may be clinically appropriate during prolonged therapy, particularly when baseline osteoporosis risk or other bone-loss factors are present.

CARDIOVASCULAR AND METABOLIC SYSTEM

Changes in estrogen availability may influence cardiovascular and metabolic physiology through:

- Lipid-profile changes
- Blood-pressure regulation
- Vascular function
- Glucose and metabolic parameters
- Interaction with underlying cardiovascular risk

Clinical significance depends on baseline health, treatment duration, concurrent medicines, hormonal status, and individual response.

REPRODUCTIVE SYSTEM

Letrozole alters estrogen synthesis and may influence:

- Menstrual and ovarian function
- Fertility and reproductive hormones
- Sexual function
- Breast and endometrial tissues
- Male estrogen-androgen balance
- Estrogen-responsive tissues
- Hypothalamic-pituitary-gonadal feedback

Use during pregnancy can cause fetal harm. In premenopausal individuals, ovarian function and concurrent hormonal therapy require specialist evaluation.

PHARMACOKINETICS

Following oral administration, letrozole is absorbed from the gastrointestinal tract. Exposure depends on tablet dissolution, gastrointestinal physiology, hepatic function, concurrent substances, and individual response.

The compound is nonsteroidal and non-esterified. It circulates systemically, undergoes hepatic metabolism through several pathways, and has an elimination profile compatible with once-daily approved regimens.

Metabolites and a smaller fraction of unchanged compound are eliminated mainly through urine and other pathways. Hepatic impairment and medicine interactions may affect exposure or clinical interpretation.

The complete pharmacokinetic profile of this fictional 2.5 mg tablet depends on the validated formulation and has not been established through independent product-specific clinical studies.

PHYSIOLOGICAL EFFECTS

By lowering estrogen biosynthesis, letrozole may influence estrogen-dependent breast tissue, bone metabolism, lipid parameters, reproductive physiology, thermoregulation, mood, cognition, and sexual function.

Its effects differ from selective estrogen-receptor modulators because aromatase inhibition reduces estrogen production throughout the body rather than selectively blocking or stimulating individual estrogen receptors.

Inappropriate or excessive exposure can produce clinically significant estrogen deficiency, including joint symptoms, reduced bone density, vasomotor symptoms, sexual dysfunction, and adverse lipid changes.

CLINICAL APPLICATIONS

Approved letrozole products are used principally in selected postmenopausal patients with hormone-receptor-positive breast cancer, including adjuvant, extended-adjuvant, and advanced-disease settings under specialist supervision.

Clinical use requires an exact approved product, confirmed indication, menopausal-status assessment, contraindication review, interaction assessment, and appropriate medical and laboratory monitoring.

The displayed 2.5 mg tablet is a fictional NEXON catalog item and should not be interpreted as an independently approved medicinal product.

SAFETY CONSIDERATIONS

Letrozole exposure requires consideration of skeletal, cardiovascular, hepatic, endocrine, reproductive, metabolic, neurological, and psychological health.

Important safety considerations include:

- Bone health and fracture risk
- Blood pressure and cardiovascular health
- Lipid profile
- Liver function
- Estradiol concentrations when clinically indicated
- Menopausal and endocrine status
- Reproductive function and pregnancy risk
- Joint and musculoskeletal symptoms
- Oral formulation tolerability
- Medication and supplement interactions
- The safety profile depends on dose, formulation, duration, individual response, underlying health conditions, and concurrent therapy. Medical supervision is essential whenever letrozole is prescribed.

Unsupervised use to manipulate estrogen levels can cause excessive suppression and does not provide a reliable substitute for clinical assessment or laboratory-guided treatment.

POTENTIAL ADVERSE EFFECTS

Potential adverse effects may involve skeletal, vasomotor, musculoskeletal, cardiovascular, metabolic, gastrointestinal, dermatological, reproductive, neurological, and psychological systems.

Endocrine and Vasomotor Effects

- Hot flushes
- Excessive estrogen suppression
- Alterations in reproductive hormone balance
- Menstrual or ovarian-function changes
- Vaginal dryness
- Changes in sexual function

Cardiovascular and Metabolic Effects

- Changes in lipid profile
- Possible increases in blood pressure
- Cardiovascular events in susceptible individuals
- Changes in glucose or metabolic parameters
- Potential increase in cardiovascular risk

Skeletal and Musculoskeletal Effects

- Reduced bone mineral density
- Increased fracture risk
- Arthralgia or joint stiffness
- Muscle or bone discomfort

Dermatological Effects

- Rash
- Pruritus
- Hair thinning
- Rare severe skin reactions
- Hypersensitivity reactions

Reproductive Effects

- Potential fetal harm
- Changes in fertility
- Alterations in reproductive hormone regulation
- Changes in libido or sexual function
- Effects on estrogen-responsive tissues

Hepatic and Neurological Effects

- Changes in liver-function parameters
- Rare clinically significant hepatic injury
- Headache
- Mood changes
- Fatigue or sleep disturbance

Oral Formulation Related Effects

- Gastrointestinal discomfort
- Nausea or appetite changes

- Hypersensitivity to letrozole or excipients
- Tablet intolerance related to formulation ingredients
- Medication errors involving tablet strength or frequency

The occurrence and severity of adverse effects vary according to exposure, duration, individual response, underlying health conditions, and concurrent medications.

CONTRAINDICATIONS

Condition	Reason
Pregnancy	Potential fetal harm from altered estrogen synthesis
Breastfeeding	Insufficient safety data and potential infant exposure
Known Hypersensitivity	Risk of allergic reaction to letrozole or excipients
Premenopausal Status Without Specialist Plan	Ovarian function may limit or alter treatment response
Severe Osteoporosis	Further estrogen reduction may increase skeletal risk
Severe Hepatic Disease	Potentially altered metabolism and limited safety data
Uncontrolled Cardiovascular Disease	Requires individualized benefit-risk assessment
Concurrent Estrogen Therapy	May oppose the intended pharmacological effect

DRUG INTERACTIONS

Potential interactions or important clinical considerations may exist with:

- Estrogen-containing medicines
- Tamoxifen
- Other aromatase inhibitors
- Hormonal therapies
- Medicines affecting bone health
- Medicines influencing lipid parameters
- Drugs affecting hepatic metabolism
- Anticancer therapies
- Laboratory tests affected by hormonal status

Estrogen-containing therapies can oppose the pharmacological purpose of aromatase inhibition, and tamoxifen may alter letrozole exposure. Clinical significance depends on the medicine, indication, health condition, and individual response.

LABORATORY MONITORING

Laboratory Test	Purpose
Estradiol	Assess estrogen suppression when clinically indicated
Lipid Profile	Cardiovascular-risk assessment
ALT / AST	Liver-function assessment
Bone Mineral Density	Evaluate baseline and longitudinal skeletal health
Calcium / Vitamin D Status	Support bone-health assessment
Blood Pressure	Cardiovascular monitoring
Pregnancy Testing	Exclude pregnancy when clinically relevant
FSH / LH	Assess menopausal or reproductive status when indicated
CBC	General hematological assessment during systemic therapy
Fasting Glucose / HbA1c	Metabolic assessment
Clinical Symptom Review	Monitor joint, vasomotor, neurological, and sexual effects

STORAGE AND STABILITY

- Store according to official product labeling.
- Protect from excessive heat, moisture, and direct sunlight.
- Keep the container tightly closed.
- Maintain original packaging integrity.
- Keep away from children.
- Inspect tablets and packaging before use.
- Do not use if the packaging is damaged or tablets show unexpected discoloration or deterioration.
- Storage requirements depend on the validated tablet formulation.

PRODUCT AUTHENTICITY

Every genuine NEXON product should include appropriate quality-verification features.

- Batch-number tracking
- Manufacturing information
- Expiration-date verification
- QR authentication system
- Tamper-evident packaging
- Authorized-distribution verification

NEXON emphasizes transparency, traceability, and product-quality control.

FREQUENTLY ASKED QUESTIONS

What is Letrozole 2.5 mg?

It is a fictional oral tablet presentation containing 2.5 mg of letrozole per tablet.

What class of medicine is letrozole?

It is a nonsteroidal aromatase inhibitor used in selected estrogen-dependent clinical settings.

What does 2.5 mg represent?

It is the labeled amount of letrozole contained in each tablet.

Is letrozole an anabolic steroid?

No. It is a nonsteroidal inhibitor of estrogen biosynthesis.

Is letrozole a SERM?

No. It inhibits aromatase rather than selectively modulating estrogen receptors.

Is it oral or injectable?

This product is presented as an oral tablet.

Does letrozole eliminate all estrogen?

No. It reduces estrogen production; the degree of suppression depends on exposure and individual physiology.

Can excessive estrogen suppression cause harm?

Yes. Very low estrogen may adversely affect bone, joints, lipids, sexual function, mood, and cardiovascular health.

Does letrozole require medical supervision?

Yes. Appropriate indication, contraindication review, monitoring, and clinician-directed dosing are important.

Is this specific NEXON 2.5 mg formulation FDA approved?

No. The displayed 2.5 mg tablet is a fictional catalog item and is not presented as an independently FDA-approved medicine.

NEXON QUALITY COMMITMENT

NEXON is committed to maintaining high standards of manufacturing quality, product consistency, traceability, and scientific transparency.

Through quality-control systems, authentication procedures, and responsible information sharing, NEXON aims to provide reliable pharmaceutical products and educational resources for healthcare professionals and informed users.

SCIENTIFIC REFERENCES

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