

RESEARCH MONOGRAPH . COMPOUND PROFILE

Stanozolol

*A pyrazol-fused 17-alpha-alkylated AAS;
the steroid involved in the Ben Johnson
1988 Olympic doping case; clinically used
historically for hereditary angioedema.*

DOCUMENT	KDC-MN-390
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COMPOUND CLASS	17-alpha-alkylated heterocyclic AAS

ABSTRACT

Stanozolol (17-beta-hydroxy-17-alpha-methyl-5-alpha-androstano[3,2-c]pyrazole; CAS 10418-03-8; molecular formula C₂₁H₃₂N₂O; molecular weight 328.49) is a pyrazol-fused 17-alpha-alkylated synthetic AAS developed by Sterling-Winthrop in 1962 and approved by the FDA (Winstrol) for hereditary angioedema and other indications. The pyrazole fusion at the A-ring increases the anabolic-to-androgenic ratio relative to testosterone and supports oral activity. Plasma half-life is approximately 9 hours (oral). Schedule III. The compound's place in popular culture is dominated by the Ben Johnson case at the 1988 Seoul Olympics, where his 100m gold medal was stripped after positive testing for stanozolol. The clinical use in hereditary angioedema (rare, often replaced by C1-INH or icatibant in modern practice) demonstrates the compound's effect on hepatic protein synthesis. Hepatotoxicity is the principal limitation. Used as a reference oral AAS in research.

1. Compound Identification

Stanozolol is described as 17-alpha-alkylated heterocyclic aas. A pyrazol-fused 17-alpha-alkylated AAS; the steroid involved in the Ben Johnson 1988 Olympic doping case; clinically used historically for hereditary angioedema.

1.1 Class summary

17-alpha-alkylated heterocyclic AAS

1.2 Subtitle

A pyrazol-fused 17-alpha-alkylated AAS; the steroid involved in the Ben Johnson 1988 Olympic doping case; clinically used historically for hereditary angioedema.

2. Abstract

Stanozolol (17-beta-hydroxy-17-alpha-methyl-5-alpha-androstano[3,2-c]pyrazole; CAS 10418-03-8; molecular formula C₂₁H₃₂N₂O; molecular weight 328.49) is a pyrazol-fused 17-alpha-alkylated synthetic AAS developed by Sterling-Winthrop in 1962 and approved by the FDA (Winstrol) for hereditary angioedema and other indications. The pyrazole fusion at the A-ring increases the anabolic-to-androgenic ratio relative to testosterone and supports oral activity. Plasma half-life is approximately 9 hours (oral). Schedule III. The compound's place in popular culture is dominated by the Ben Johnson case at the 1988 Seoul Olympics, where his 100m gold medal was stripped after positive testing for stanozolol. The clinical use in hereditary angioedema (rare, often replaced by C1-INH or icatibant in modern practice) demonstrates the compound's effect on hepatic protein synthesis. Hepatotoxicity is the principal limitation. Used as a reference oral AAS in research.

3. Mechanism of Action

Pyrazol-fused 17-alpha-alkylated AAS; AR agonism with elevated anabolic-to-androgenic ratio. Oral activity via 17-alpha-alkylation; hepatotoxic at high doses.

The mechanistic profile described above represents the consensus position from peer-reviewed literature where available; for compounds with sparse formal characterization, this section reflects vendor-grade reports and structurally-related class pharmacology and should be interpreted with appropriate caution.

4. Pharmacokinetics and Routes of Administration

Pharmacokinetic data are summarized within the abstract for compounds with formal Phase 1 records. Compounds without published human pharmacokinetic studies are noted as such; investigators should treat the absence of data as a research limitation.

5. Reported Research Dose Ranges

Clinical (historical hereditary angioedema) 2 mg three times daily.

Doses are scaled from clinical use where the compound is approved as a medicine, from Phase 2/3 trials where development advanced, or from rodent dose-response data scaled by allometric assumptions where the compound has no human clinical record. Investigators should treat dose ranges from research-chemical-grade vendors as starting points for their own pharmacokinetic and tolerability characterization rather than validated dosing recommendations.

6. Sourcing and Quality Verification

Investigators should obtain analytical confirmation of identity (mass spectrometry; for peptides, additionally amino acid analysis or N-terminal sequencing) and purity (HPLC area-percent, ideally greater than 95 percent) on every lot. Vendor certificates of analysis vary in quality; third-party analytical confirmation through independent laboratories (e.g., Janoshik Analytical, Anabolic Lab) is the gold standard for research-grade peptides and small molecules.

For compounds with established pharmaceutical-grade marketing in any jurisdiction, sourcing from the marketed product (where legal and accessible) provides the highest quality assurance.

7. Reconstitution and Handling

Peptides should be reconstituted in bacteriostatic water or sterile water for injection in the volume appropriate to the desired concentration; lyophilized peptides should be allowed to come to room temperature before reconstitution to minimize precipitation. Reconstituted peptides should be stored refrigerated and used within the timeframe specified by the manufacturer (typically 14 to 30 days for bacteriostatic water reconstitutions, shorter for sterile water).

Small molecules: storage conditions vary by compound; consult the certificate of analysis for the specific product. Most are stable at room temperature in dry, dark conditions; oxidation-sensitive compounds (e.g., catecholamine precursors) require cool storage and protection from light.

8. Stack Interaction Considerations

Investigators combining this compound with other research substances should consider receptor-level interactions (additive effects at shared targets), enzyme-level interactions (CYP-mediated drug-drug interactions where applicable), and pharmacodynamic interactions (additive sedation, additive serotonergic activity, additive hemodynamic effects).

The stack interaction section in published monographs of well-characterized compounds is necessarily incomplete for any specific combination; investigators should treat novel combinations with elevated caution and titrate gradually.

9. References

1. Mosby's Drug Reference. Stanozolol. 2018.
2. Cicardi M, et al. Hereditary angioedema treatment with stanozolol. J Allergy Clin Immunol 1991.
3. Kicman AT. Pharmacology of anabolic steroids. Br J Pharmacol 2008.

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