

RESEARCH MONOGRAPH . COMPOUND PROFILE

Anavex 2-73 (Blarcamesine)

A sigma-1 agonist with muscarinic acetylcholine receptor activity; investigated for Alzheimer disease, Parkinson dementia, and Rett syndrome.

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ABSTRACT

Anavex 2-73 (blarcamesine, AVN-101; CAS 195615-83-9; molecular formula C₁₆H₂₁NO; molecular weight 243.34) is a multi-target sigma-1 agonist with muscarinic acetylcholine receptor activity, developed by Anavex Life Sciences. Sigma-1 affinity is approximately 860 nM (lower than cutamesine but functionally meaningful); the compound additionally interacts with muscarinic M1 and M2 receptors. Phase 2 trials in Alzheimer disease and Parkinson disease dementia demonstrated dose-dependent improvements in some cognitive endpoints. Phase 3 in Rett syndrome (EXCELLENCE trial) reported positive results in 2024 for select endpoints. Plasma half-life is approximately 14 hours. Used as a multi-target research compound for sigma-1 and muscarinic neuropharmacology.

1. Compound Identification

Anavex 2-73 (Blarcamesine) is described as sigma-1 agonist + muscarinic modulator. A sigma-1 agonist with muscarinic acetylcholine receptor activity; investigated for Alzheimer disease, Parkinson dementia, and Rett syndrome.

1.1 Class summary

Sigma-1 agonist + muscarinic modulator

1.2 Subtitle

A sigma-1 agonist with muscarinic acetylcholine receptor activity; investigated for Alzheimer disease, Parkinson dementia, and Rett syndrome.

2. Abstract

Anavex 2-73 (blarcamesine, AVN-101; CAS 195615-83-9; molecular formula $C_{16}H_{21}NO$; molecular weight 243.34) is a multi-target sigma-1 agonist with muscarinic acetylcholine receptor activity, developed by Anavex Life Sciences. Sigma-1 affinity is approximately 860 nM (lower than cutamesine but functionally meaningful); the compound additionally interacts with muscarinic M1 and M2 receptors. Phase 2 trials in Alzheimer disease and Parkinson disease dementia demonstrated dose-dependent improvements in some cognitive endpoints. Phase 3 in Rett syndrome (EXCELLENCE trial) reported positive results in 2024 for select endpoints. Plasma half-life is approximately 14 hours. Used as a multi-target research compound for sigma-1 and muscarinic neuropharmacology.

3. Mechanism of Action

Sigma-1 receptor agonist combined with muscarinic M1/M2 activity. Multi-target neuroprotective profile.

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

Trial doses 10 to 50 mg per oral administration 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. Vamvakides A. Mechanism of action of A2-73, a putative cognitive enhancer with anxiolytic and anti-amnesic activities. Ann Pharm Fr 2002.
2. Hampel H, et al. Phase 2 trial of blarcamesine (Anavex 2-73) in mild-to-moderate Alzheimer's disease. J Prev Alzheimers Dis 2020.
3. Macfarlane S, et al. Anavex 2-73 in Rett syndrome (AVATAR/EXCELLENCE programs). Mol Psychiatry 2024.

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