

RESEARCH MONOGRAPH . COMPOUND PROFILE

Mesocarb (Sydnocarb)

A Soviet-developed sydnone-imine class psychostimulant marketed for fatigue and ADHD-like indications, characterized by gradual catecholamine release and modest abuse liability relative to amphetamines.

DOCUMENT	KDC-MN-024
ISSUED	2026-05-09
REVISION	1.0
AUTHOR	Kodiac bioLabs Research
COMPOUND CLASS	Sydnone-imine stimulant

ABSTRACT

Mesocarb (Sydnocarb; CAS 34262-84-5; molecular formula $C_{18}H_{18}N_4O_2$; molecular weight 322.36) is a sydnone-imine class psychostimulant developed in the Soviet Union in the 1970s and marketed in the USSR and successor states for asthenia, narcolepsy, ADHD, and post-stroke fatigue. The compound is a phenylisopropylsydnnonimine and is structurally distinct from the amphetamine scaffold despite producing amphetamine-like central effects. Mechanism is gradual release of stored catecholamines (dopamine, norepinephrine) from presynaptic terminals through an indirect mechanism that does not depend on the DAT/NET inversion characteristic of amphetamines. The kinetics of release are substantially slower than amphetamine; plasma concentrations rise gradually over 1 to 3 hours after oral administration and decline over 6 to 8 hours. The slower kinetics correspond clinically to less reinforcing subjective effect, lower abuse liability, and a flatter cardiovascular profile than equivalent amphetamine doses. Mesocarb is not approved by the FDA, EMA, or any Western regulatory authority. The compound is registered as a medicine in Russia, Ukraine, Belarus, and several other former Soviet states; it is sold as a research chemical in the West. The clinical evidence base is largely Russian-language literature; published English-language reviews are sparse but credible reports describe efficacy in attention deficit, depression-related fatigue, and post-stroke cognitive impairment. Doses in clinical use are 5 to 50 mg per day in divided doses. Safety considerations include the same general cautions as other catecholaminergic stimulants (insomnia, anxiety, tachycardia, hypertension) but at attenuated rates relative to amphetamines.

1. Compound Identification

Mesocarb (Sydnocarb) is described as sydnone-imine stimulant. A Soviet-developed sydnone-imine class psychostimulant marketed for fatigue and ADHD-like indications, characterized by gradual catecholamine release and modest abuse liability relative to amphetamines.

1.1 Class summary

Sydnone-imine stimulant

1.2 Subtitle

A Soviet-developed sydnone-imine class psychostimulant marketed for fatigue and ADHD-like indications, characterized by gradual catecholamine release and modest abuse liability relative to amphetamines.

2. Abstract

Mesocarb (Sydnocarb; CAS 34262-84-5; molecular formula C₁₈H₁₈N₄O₂; molecular weight 322.36) is a sydnone-imine class psychostimulant developed in the Soviet Union in the 1970s and marketed in the USSR and successor states for asthenia, narcolepsy, ADHD, and post-stroke fatigue. The compound is a phenylisopropylsydnimine and is structurally distinct from the amphetamine scaffold despite producing amphetamine-like central effects. Mechanism is gradual release of stored catecholamines (dopamine, norepinephrine) from presynaptic terminals through an indirect mechanism that does not depend on the DAT/NET inversion characteristic of amphetamines. The kinetics of release are substantially slower than amphetamine; plasma concentrations rise gradually over 1 to 3 hours after oral administration and decline over 6 to 8 hours. The slower kinetics correspond clinically to less reinforcing subjective effect, lower abuse liability, and a flatter cardiovascular profile than equivalent amphetamine doses. Mesocarb is not approved by the FDA, EMA, or any Western regulatory authority. The compound is registered as a medicine in Russia, Ukraine, Belarus, and several other former Soviet states; it is sold as a research chemical in the West. The clinical evidence base is largely Russian-language literature; published English-language reviews are sparse but credible reports describe efficacy in attention deficit, depression-related fatigue, and post-stroke cognitive impairment. Doses in clinical use are 5 to 50 mg per day in divided doses. Safety considerations include the same general cautions as other catecholaminergic stimulants (insomnia, anxiety, tachycardia, hypertension) but at attenuated rates relative to amphetamines.

3. Mechanism of Action

Indirect catecholamine releaser through a slow, non-DAT/NET-inversion mechanism. Releases dopamine and norepinephrine from presynaptic stores with kinetics distinct from amphetamines.

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

5 to 50 mg per day in divided doses (Russian clinical literature).

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. Mashkovskii MD, et al. Sydnocarb (mesocarb): pharmacology and clinical use. Soviet Pharmacology 1980s.
2. Anderson AL, et al. Mesocarb: a sydnonimine psychostimulant. Psychopharmacology Bulletin 1990s (English review).
3. Voronina TA. Pharmacology of nootropic and psychostimulant agents. Russian neuroscience literature compilation.

This monograph is provided for research use only. Not for medical, diagnostic, or therapeutic purposes. Not for human consumption. Compound class generalizations are noted where compound-specific data are sparse; investigators should weight the evidence accordingly.