

The kinetics of cathine (d-norpseudoephedrine) describe how the compound is absorbed, distributed, metabolized, and excreted in the body. --- Factors Influencing Kinetics Individual Variability: Genetics, liver enzyme activity, and kidney function affect cathine metabolism and clearance. Renal Clearance: Cathine is partially reabsorbed in the renal tubules depending on urine pH. Alkaline urine increases reabsorption, prolonging its half-life. Absorption Route of Administration: Typically ingested orally or absorbed through mucous membranes (e.g., by chewing khat leaves). Bioavailability: Cathine is well absorbed from the gastrointestinal tract, though its bioavailability depends on the form consumed (fresh khat vs. isolated compound). Excretion Primary Route: Excreted in urine, primarily as unchanged cathine and minor metabolites. CNS Penetration: Crosses the blood-brain barrier, allowing it to exert stimulant effects on the brain. Metabolism Primary Pathway: Metabolized in the liver via oxidation and deamination. Enzymatic Activity: Cathine is processed by enzymes such as monoamine oxidase (MAO), particularly in the liver and brain. Dose-Dependent Kinetics Cathine exhibits linear pharmacokinetics at typical doses. Co-Administration: Combining cathine with other substances (e.g., alcohol or other stimulants) may alter its kinetics and increase the risk of side effects. Distribution Plasma Protein Binding: Cathine has low plasma protein binding, meaning it remains mostly free in the bloodstream to act on target tissues. Volume of Distribution (Vd): Moderate distribution throughout the body, crossing biological membranes to reach the central nervous system (CNS). Active Metabolites: Limited formation of active metabolites compared to its precursor, cathinone. Half-Life: Approximately 3–6 hours, though this can vary depending on individual metabolism and kidney function. Higher doses may lead to a proportional increase in plasma concentrations. Chronic Use: Long-term use can lead to tolerance and altered metabolism. Here's an overview: --- Pharmacokinetics of Cathine 1. Onset of Action: Effects usually begin within 1–2 hours of ingestion. --- 2. --- 3. --- 4.