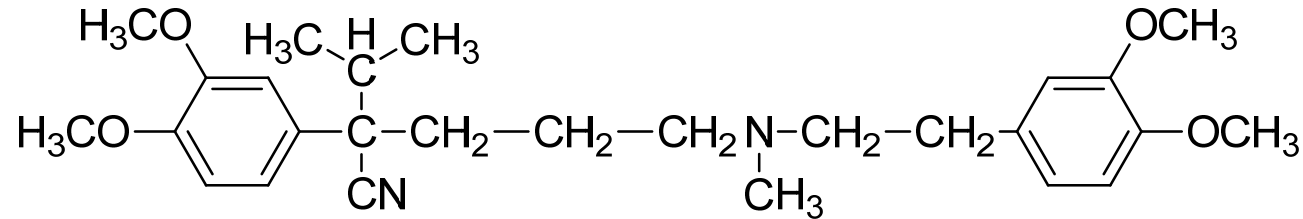


Calcium channel blockers

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Verapamil

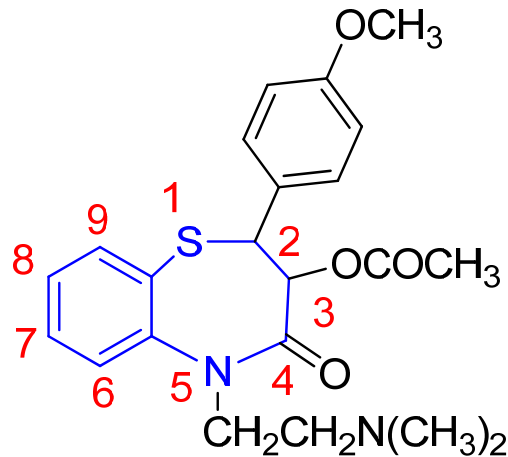


IUPAC: 5-[(3,4-dimethoxyphenethyl)methylamino]-2-(3,4-dimethoxyphenyl) isopropylvaleronitrile

Uses: Verapamil inhibits L-type calcium channels by binding to a specific area of their alpha-1 subunit. Calcium influx through these channels allows for the propagation of action potentials necessary for the contraction of muscle tissue and the heart's electrical pacemaker activity. Verapamil binds to these channels in a voltage- and frequency-dependent manner. Inhibition of calcium influx prevents the contraction of vascular smooth muscle, causing relaxation/dilation of blood vessels throughout the peripheral circulation - this lowers systemic vascular resistance (i.e. afterload) and thus blood pressure.

Uses: Verapamil is indicated in the treatment of unstable angina, and chronic stable angina. It is also indicated to treat hypertension.

Diltiazem

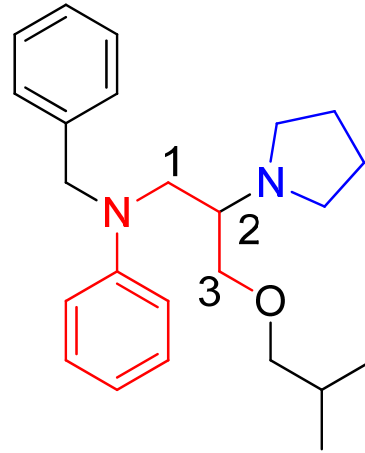


(+)-cis-5-[2-(dimethylamino)ethyl]-2,3-dihydro-3-hydroxy-2-(p-methoxyphenyl)-1,5-benzothiazepin-4(5H)-one acetate ester

MOA: It works through various mechanisms of action, but it primarily works by inhibiting the calcium influx into cardiac and vascular smooth muscle during depolarization. Compared to dihydropyridine drugs, such as nifedipine, that preferentially act on vascular smooth muscle and verapamil that directly acts on the heart muscle, diltiazem displays an intermediate specificity to target both the cardiac and vascular smooth muscle.

Uses: Indicated for the management of hypertension, to lower blood pressure, alone or in combination with other antihypertensive agents.

Bepridil



N-benzyl-N-[3-(2-methylpropoxy)-2-(pyrrolidin-1-yl)propyl]aniline

MOA: Bepridil has inhibitory effects on both the slow calcium (L-type) and fast sodium inward currents in myocardial and vascular smooth muscle, interferes with calcium binding to calmodulin, and blocks both voltage and receptor operated calcium channels. Bepridil inhibits the transmembrane influx of calcium ions into cardiac and vascular smooth muscle. Bepridil regularly reduces heart rate by dilating peripheral arterioles and reducing total peripheral resistance (afterload) against which the heart works.

Uses: Used for the treatment of hypertension, and chronic stable angina.