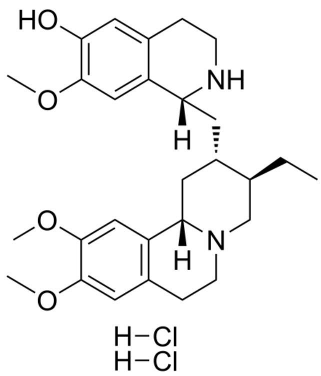
Data Sheet

Product Name: Cephaeline (dihydrochloride)
Cat. No.: CS-6842
CAS No.: 5853-29-2
Molecular Formula: $C_{28}H_{40}Cl_2N_2O_4$
Molecular Weight: 539.53
Target: Cytochrome P450
Pathway: Metabolic Enzyme/Protease
Solubility: H2O : 125 mg/mL (231.68 mM; Need ultrasonic); DMSO : 250 mg/mL (463.37 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

Cephaeline dihydrochloride is a selective **CYP2D6** inhibtor with an **IC_{50}** of 121 μM. IC50 & Target: IC50: 121 μM (CYP2D6)[1]
Ki: 54 μM (CYP2D6)[1] ***In Vitro:*** CYP2D6 reveals the highest metabolic activity for the generation of 9-O-demethylEmetine, whereas this enzyme also shows a significant metabolic activity for the generation of Cephaeline. The IC_{50}s of Cephaeline against CYP2C9, CYP2D6 and CYP3A4 is over 1000, 121 and 1000 μM, respectively. Further experiments are performed to determine inhibition constants (K_i) for Cephaeline on the CYP2D6 and CYP3A4 activities Graphic analysis of Dixon plots at various Cephaeline concentrations for each of the two CYP enzyme assays yield K_is of 54 and 355 μM for CYP2D6 and CYP3A4, respectively[1].

PROTOCOL (Extracted from published papers and Only for reference)

Kinase Assay: [1]Cephaeline is dissolved in methanol to give concentrations of 0.1, 1, 10, 100 μM (only theophylline-O-demethylase activity with Cephaeline; 0.0985, June 2001 679 0.985, 9.85, 98.5 μM) [1].
Human liver microsomal protein is incubated with the selected marker substrates in the absence and presence of above concentrations of Cephaeline or Emetine (1-100 μM, only theophylline-O-demethylase activity with Cephaeline; 0.0985—98.5 μM, final concentration). Incubation conditions are chosen such that the product formation is linear with respect to both incubation times and protein concentrations, with substrate concentrations being at or below the K_m for each enzyme. The effects of furafylline, sulphaphenazole, tranylcypromine, quinidine, and ketoconazole, selective inhibitors of CYP1A2, CYP2C9, CYP2C19, CYP2D6 and CYP3A4, respectively, are also determined in the same microsomal samples to provide comparisons with inhibitory potentials (IC_{50}) of Cephaeline and Emetine towards the individual CYP form. The K_i s for Cephaeline and Emetine are determined by using the same pooled microsomal sample. This is achieved by varying the initial substrate concentrations (bufuralol 8, 16 and 32 μM; testosterone 45, 90 and 180u M) and using several inhibitor concentrations of 10, 50, and 100 μM. The K_is are estimated by graphic analysis of Dixon plots. These values are subsequently used as initial estimates for the nonlinear least-squares regression analysis[1].

References:

[1]. Asano T, et al. Metabolism of ipecac alkaloids Cephaeline and Emetine by human hepatic microsomal cytochrome P450s, and their inhibitory effects on P450 enzyme activities. Biol Pharm Bull. 2001 Jun;24(6):678-82.

CAIndexNames:

6-Isoquinolinol, 1-[[(2S,3R,11bS)-3-ethyl-1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H-benzo[a]quinolizin-2-yl]methyl]-1,2,3,4-tetrahydro-7-methoxy-, hydroc hloride (1:2), (1R)-

SMILES:

Cl[H].CC[C@@H](CN1CC2)[C@H](C[C@@]1([H])C3=C2C=C(OC)C(OC)=C3)C[C@]4([H])C5=CC(OC)=C(O)C=C5CCN4.Cl[H]

Caution: Product has not been fully validated for medical applications. For research use only.

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