

## Ambroxol

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Ambroxol, active ingredient of Mucosolvan<sup>®</sup> or Mucoanginis<sup>®</sup>, has local anesthetic properties and is a systemically active mucolytic agent used for decades in the treatment of respiratory disorders associated with excessive mucus, chronic inflammatory pulmonary conditions, bronchitis, and/or pneumonia. The onset of action occurs after 30 minutes when administered orally. The drug works by breaking acid mucopolysaccharide fibers causing the sputum to be thinner and less viscous, therefore more easily removed by coughing. Although Ambroxol has been on the market for numerous years, this was the first encounter our Toxicology Laboratory has had with the drug.

### General Information

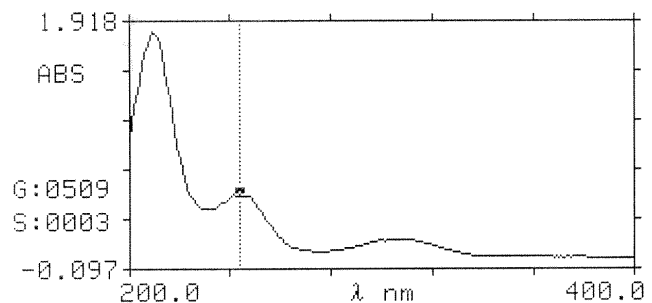
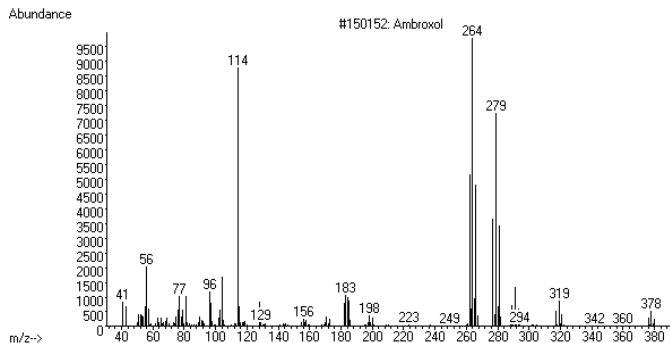
Common Name:	Ambroxol
Trade Names:	Mucosolvan <sup>®</sup> , Mucoangin <sup>®</sup>
Chemical Name:	<i>trans</i> -4-(2-Amino-3,5-dibrombenzylamino)-cyclohexanol
Chemical Formula:	C <sub>13</sub> H <sub>18</sub> Br <sub>2</sub> N <sub>2</sub> O
Formula Weight:	414.56 (Ambroxol HCl)
Molecular Weight:	378.10
CAS Number:	18683-91-5
Administration:	Tablets - 30 mg Syrup - 5 ml containing 15 mg
Sigma Aldrich	Catalog No. A9797



### Toxicology

Extraction:	n-butylchloride basic liquid/liquid drug extraction with an acid back extraction
Detection:	GC/NPD - Linearity (r <sup>2</sup> =0.99) from 0.10-2.0 ug/ml utilizing Carbinoxamine as IS (*method not fully validated) GC/MS - 264, 279, 114, 319, 378 m/z

Elution Order:	Paroxetine, Metoclopramide, <b>AMBROXOL</b> , Fentanyl, Olanzapine
UV-VIS:	Experimentally determined - Molar Absorptivity Coefficient at 244 nm in 0.1 N HCl averaged 255 (10 mg/ml)



### Case Study

In May 2008, a thirty-five year old female with a recent diagnosis of pneumonia, a history of depression, and a past suicide attempt (18 years ago by Drano<sup>®</sup> ingestion) was found unresponsive at home and subsequently died upon arrival at the hospital. The autopsy results were inconclusive, therefore, the cause and manner of death was deferred for Toxicology. The Toxicology results are represented in the adjacent table. The Medical Examiner determined the cause of death to be Multiple Drug Intoxication with a mode of death as Undetermined.

Drug	Heart Blood (ug/ml)
Dextromethorphan	0.46
Promethazine	0.44
Hydrocodone	0.46
Levorphanol	Present
Ambroxol	*0.44