**Title of trial:** Mucokinetic effects of ambroxol hydrochloride in infants with respiratory infections with and without chronic lung disease

**Principal/Coordinating Investigator:** Halac Obregon

**Trial sites:** Cardiopulmonary Unit, Primer Instituto neonatalogica, Dean Funes 454/458, 5000 Cordoba, Argentina

**Publication (reference):** Boehringer Ingelheim in-house report

**Clinical phase:** I/II

**Objectives:** To evaluate efficacy of a. hydrochloride in severely ill infants during acute stage of either bacterial or viral respiratory tract infections. Infants with history of previous lung disease such as BPD were included to evaluate whether the drug worked better in previously healthy or diseased airways

**Methodology:** Open, controlled, single center

- Phase I called for suctioning 10 minutes before and after aerolisation of 2 cc of normal saline placebo
- Phase II Substitution of placebo by 7 % sterile isotonic solution of Ambroxol hydrochloride
Name of company: Boehringer Ingelheim

Name of finished product: Mucosolvan®

Name of active ingredient: Trans-4-[(2-amino-3,5-dibromo-benzyl)amino]cyclohexanol hydrochloride (= Ambroxol hydrochloride)

No. of subjects:
- Treatment group A: 16 infants (12 bronchiolitis, 3 pneumonia, 1 Klebsiella) without previous history of lung disease
- Treatment group B: 11 infants (8 bronchiolitis, 3 pneumonia) who had been previously mechanically ventilated as newborns and with development of bronchopulmonary disease (BPD)

Diagnosis and main criteria for inclusion: Severely ill infants during acute stage of either bacterial or viral respiratory tract infections

Test product: Ambroxol HCl intravenous 5 mg/kg/day
- dose: 5 mg/kg/day divided in 4 doses
- mode of admin.: Intravenous
- batch no.: n.a.

Reference therapy: None
- dose: n.a.
- mode of admin.: n.a.
- batch no.: n.a.

Duration of treatment: Infusion on alternate days during three days

Criteria for evaluation:
**Efficacy / clinical pharmacology:** Changes in mucus volume and viscosity, changes in purulent sputum volume and viscosity

**Safety:** Side effects

**SUMMARY – CONCLUSIONS:**

**Efficacy / clinical pharmacology results:** Group A: no changes in volume or viscosity of mucus during saline administration; after ambroxol administration volume of secretion increased (p<0.001). Viscosity was reduced for both mucoid (P<0.05) and purulent sputa (p<0.001). Samples for group B patients behaved in a similar fashion. Purulent sputa from group A and B patients showed similar changes in absolute volume. However viscosity was higher during placebo infusion as compared with ambroxol infusion. Elasticity was not affected by ambroxol for mucoid sputa to a noticeable extent but was increased in purulent sputa.

**Safety results:** No significant changes were seen in the hematological, hepatic or renal function studies which could be ascribed to ambroxol use.

**Conclusions:** Altogether, ambroxol provides changes in viscosity of secreted airway mucus during acute viral and bacterial infections and this effect seems more marked in previously diseased airways subjected to an acute insult. The viscosity reducing action takes place during aerosol and parenteral administration of the drug.