



Asymmetrically Substituted Thiourea Derivatives: Potential Anti-TB Therapeutic Agents

The human pathogen *Mycobacterium tuberculosis* (*M.tb*) causes tuberculosis and is currently responsible for more deaths than any other infectious disease (3 million annually). Despite the fact that the World Health Organization (WHO) has declared TB a global public health emergency, no new TB drugs have been successfully developed in the last 50 years. Isoxyl, a thiourea derivative comprising two isoamyloxyphenyl moieties, was found in the 1960's to display promising anti-TB activity but could not be further developed due to a lack of bioavailability (caused by its poor solubility in aqueous systems).

Recently, researchers at CSU have synthesized several asymmetrical analogs of Isoxyl which exhibit low minimum inhibitory concentrations (MICs) nearly equal to that of Isoxyl but with increased water solubility. The greater hydrophilic nature of these compounds was achieved through the substitution of an isoamyloxyphenyl moiety by one of several carbohydrate derivatives. These novel compounds are promising new anti-TB drug candidates due to their low MICs and enhanced bioavailability.

ID: CSURF 08-010

Inventor Information

Avraham Liav

Shiva K. Angala

Patrick J. Brennan

Features and Benefits

- Improved activity over isoxyl in 4 drug resistant TB strains
- Low minimum inhibitory concentrations (MICs) of 1.56-3.125 µg/mL
- Enhanced absorption over isoxyl suggests improved bioavailability
- Toxicity studies in mice show the compound is non-toxic up to 500 mg/kg
- Further optimization possible

Contact Information:

Todd Headley

Phone: 970.491.5000

Email: todd@microrx.org

www.MicroRx.org