

# Novel Isoselenazolone Derivatives Show Effectiveness Against Multiple Human Disease-causing Pathogens

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## Technology description

### Invention Description:

Neurodegenerative, inflammatory and other physiological diseases are linked to the activity of reactive oxygen species (ROS). Glutathione peroxidase is a Selenium-based enzyme that has been shown to protect biomembranes and other cellular components from damage caused by ROS, by scavenging hydrogen peroxide and hydroperoxides. In light of that, synthetic Selenium-based compounds such as Ebselen that mimic the activity of glutathione peroxidase are being investigated for therapeutic effect. Researchers at the University of Toledo have designed and synthesized novel potent isoselenazolone compounds that may be useful as anti-infective, anti-inflammatory, anti-cancer, cytoprotective, neuroprotective, and anti-oxidant agents.

### Value Proposition:

- The novel method is simple and uses no harsh reagents
- The isoselenazolone derivatives are made with unique composition
- The compounds are synthesized with unique chemistry
- The novel compounds have potential for multiple new treatments in infectious disease, cancer, stroke, Alzheimer's disease, and other indications

## Application area

The novel compounds show activity against:

- o Gram-positive bacteria such as *Staphylococcus aureus*, methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Staphylococcus aureus*, *Staphylococcus simulans* and *Helicobacter pylori*
- o Gram-negative bacteria such as *Haemophilus influenzae*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*
- o Acid-fast bacteria such as *Mycobacterium tuberculosis* and other *Mycobacterium* species
- o Yeast and fungi such as *Saccharomyces cerevisiae*, *Candida albicans*, and *Aspergillus niger*
- o Viruses such as herpes simplex virus type-I (HSV-1), encephalomyocarditis virus, and vesicular stomatitis virus

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