



Research: Guaifenesin (an ingredient in over-the-counter drugs) aids in clearance of mucus from the respiratory tract—how does it work?

Lead Scientist(s): JeanClare Seagrave, PhD

Disease/Condition: Excess Mucus

Guaifenesin is an ingredient in over-the-counter drugs sold to aid in the clearance of mucus from the respiratory tract. However, its mechanism of action is unknown. Dr. JeanClare Seagrave's laboratory, in collaboration with scientists Dr. K. Chul Kim and Dr. Bruce Rubin (currently at Virginia Commonwealth University) performed a series of experiments using a cell culture model. This model was produced from cells collected from the lungs of people who died and donated their organs to research. These cell cultures produce mucus and move it on the surface of the cultures using cilia, the microscopic "paddles" that clear mucus in the upper respiratory tract. The results showed that guaifenesin had three effects, all of which contribute to mucus clearance. Specifically, guaifenesin suppressed the synthesis of the mucus proteins, increased the speed with which the mucus moved on the surface of the cells, and reduced the viscosity of the mucus. These results provide information relevant to understanding mechanisms for alleviating the distress of excess mucus secretion and inadequate clearance.