Boron-based Neuromuscular Blockers

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Technology description

University of Missouri Office of Technology Management & Industry Relations Non-Confidential Abstract of Invention UM Disclosure No. 17UMC049 Fast-Acting and Quickly Reversible Neuromuscular Blockers for Medical Procedures INNOVATION Researchers have developed a new fast-acting and quickly reversible boron based neuromuscular blocker designed to paralyze muscles for procedures like tracheal intubation, mechanical ventilation, electroconvulsive therapy, and others. Specifically, this boron-based blocker targets nicotinic acetylcholine receptors at the neuromuscular junction, creating an interference with chemical signals traveling from motor nerves to muscles, thus causing muscle paralysis. This new neuromuscular blocker has the potential to offer the quick action and reversibility generally associated with the depolarizing class of compounds without adverse side effects. BACKGROUND Neuromuscular blockers are important in delicate surgical procedures to prevent muscle movement. A small movement while a surgeon opens a site could lead to catastrophic and permanent damage to a patient. There are two main families of neuromuscular blockers, depolarizers and non-depolarizers. Depolarizers are generally smaller molecules that act quickly and can be reversed quickly, but suffer from unwanted side effects including hyperkalemia, cardiac arrhythmias, muscle pain, and increase in intraocular and gastric pressure. Non-depolarizers are by comparison generally larger molecules that are relatively slower acting and take longer to reverse. While the slower mode of action is less preferred, due to the risk of hypoxic episodes associated with slower reversal, non-polarizers are generally preferred due to the fewer number of adverse side effects and the overall risk. MU’ s new fast-acting and quickly reversible neuromuscular blocker has the potential to offer the benefits of both categories of compounds while minimizing associated risk. APPLICATIONS • Tracheal intubation • Mechanical ventilation • Electroconvulsive therapy ADVANTAGES • Rapidly reversible reaction • Size of molecule is between depolarizing and non-depolarizing blockers PATENT STATUS • Patent Pending INVENTOR(S) • George Kracke • Lalit Goswami • Marion Hawthorne • Satish Jalisatgi CONTACT INFO Office of Technology Management & Industry Relations Brian Buntaine, MS, MBA Senior Licensing & Business Development Associate Email: buntaineb@missouri.edu Phone: 573-882-0470

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