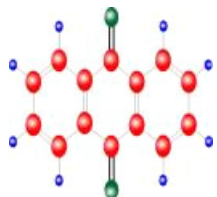




New Selective and High Yielding Route for Generating Substituted Hydroquinones

Mitigating cellular toxicity following heart attack, stroke, and chemotherapy

Medical research clearly links the decomposition of sphingomyelin to increased cell death following a physically traumatic episode such as heart attack, stroke, or exposure to chemotherapeutic drugs. The agent responsible for this chemical breakdown is neutral sphingomyelinase (nSMase), which is produced naturally in large quantities in response to these episodes. Subsequent cell death adds to a multitude of problems in patient care including prolonged and expensive post-event secondary care, adding billions of dollars yearly to total health industry costs. As a result the patient, medical staff and medical system suffer from preventable disease continuation.



Hydroquinones and quinone derivatives, both found extensively in nature, inhibit nSMase and thus prevent cell death. Quinone derivatives are an integral part of normal biological pathways, but are difficult to produce cheaply in large quantities for pharmacological use. Dr. Thomas E. Cole's technology provides a method of using alkylated and alkenylated hydroquinone products that inhibit nSMase as effectively as natural inhibitors. This technology thus makes it possible to manufacture pharmaceutical grade quinone derivatives for mass medical application in an effort to reduce cell death.

The new method of alkylating and alkenylating quinone produces high yield and very high purity compounds. It demonstrates high selective reactivity that is stereospecific and cleaner than existing reactions. Hydroquinones and quinone derivatives are appropriate for pharmaceutical applications, and have already been incorporated into existing

drugs and chemical precursors. The ability to efficiently produce these compounds presents an opportunity for the commercial manufacture of novel drugs that treat injuries associated with heart disease, stroke, and cancer therapy.

Benefits

- May reduce research costs
- Saves long-term patient care costs
- Decreases likelihood of patient mortality
- Method is highly selective
- Low concentration requirements
- Easily incorporated into drugs

Applications

- New drug discovery
- Cardiac disease, stroke, surgical and cancer patient treatment

rev. 2/21/2006

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