Synthetic Compounds for Treatment of Neurogenic Inflammation (Synthetic Topsentin Analogs)

Application

Novel anti-inflammatory compounds derived from extracts of marine sponges.

Inflammation and its associated pain continue to affect millions of humans and animals. New therapies are needed that are effective and have low toxicity.

Technology

Assays of new compositions of biologically active bis-heterocycles showed significant reduction in inflammation as measured in the mouse ear edema test. This proven anti-inflammatory activity offers a novel use for these bis-indoles. Surprisingly, Soritin A shows strong activity against both immunogenic and neurogenic inflammation, which is an unexpected bonus.

Three compounds are disclosed in this patent: Soritin A, HB-238; Bis(3,3’indolyl)methane, HB-236; and 2-Bis(3,3’ indolyl)acetaldehyde, HB-237, all of which were derived from marine sponges. Soritin A was tested against hydrocortisone, indomethacin, manoalide, and topsentin in the topical inhibition of phorbol myristate acetate (PMA) induced mouse ear edema. Additionally, soritin A and its analogs were tested against resiniferatoxin (RTX) induced ear edema in the mouse and showed impressive results.

Competitive Advantage

Marine sponges are a ready-made source of innumerable biologically active compounds that may have commercial applications. These bis-indoles, derived from marine sponges, have been isolated, characterized, and synthesized. As demonstrated by the mouse ear edema assays, soritin A is especially intriguing as a highly effective anti-inflammatory compound. The compounds can be used in various dosage forms and administered via many routes including liposome technology, slow release capsules, implantable pump, or biodegradable carrier. The flexibility of dosage forms and routes of administration offer a distinct advantage over many marketed anti-inflammatories.
These novel compounds also demonstrate the ability to block both immunogenic and neurogenic inflammation. Asthma, allergies, rheumatoid arthritis, and diseases that cause joint inflammation are all examples of immunogenic inflammatory conditions that are in need of promising new pharmaceutical compositions. Neurogenic inflammation is linked to conditions such spinal cord injury, diabetic side effects, and even cardiovascular diseases. Soritin A may also have therapeutic potential in wound healing, giving it a double advantage in cases where both wounds and inflammation are present.

The commercial opportunities are vast for therapeutic substances that can reduce inflammation in a clinically meaningful way. Inflammation is part of the equation in conditions such as migraine, arthritis, burns, chronic pain, cardiovascular diseases, certain cancers, and many more. Conventional anti-inflammatories can cause serious adverse effects, including upper gastrointestinal bleeding. There is a market for novel anti-inflammatories that are effective in small doses, and offer an acceptable safety profile.

### Stage of Development

- Three compounds; one lead compound-Soritin A
- Assays of anti-inflammatory activity in topical use in mice

### Patent Status


### Researchers

Amy E. Wright Ph.D. Director, Research Professor, Harbor Branch Oceanographic at Florida Atlantic University. Currently on the faculty of the Medical University of South Carolina, in the Marine Biomedicine and Environmental Sciences Department, Dr. Wright has conducted research in the field of natural products chemistry. Her research focuses on the discovery of compounds with utility in the treatment of cancer and infectious disease. She has authored approximately 60 publications and 34 patents.

Ralph-Heiko Mattern Ph.D., Formerly with Integra Neurosciences, San Diego, California has authored seven patents and 43 publications. He has worked on development of collagen based medical devices such as artificial skin and nerve guides. He is currently an independent consultant in the fields of medical devices, collagen products, and peptide formulation.

Robert S. Jacobs Ph.D., Professor Emeritus of Pharmacology, Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara, California. His research interests concern the cellular and molecular mechanism of action of marine natural products and toxins. He has authored approximately 89 publications and 23 patents.

### Field

Anti-Inflammatory Agents; Drug discovery
Inventors

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