Drug Discovery & Development

Anthelmintic Benzodiazepines with Reduced Sedative Activity

WiSys: T220009WO01

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WiSys is seeking strategic partners in the human and animal pharmaceutical industries who could provide a route to market for the commercialization and use of these drugs.

Overview

Schistosomiasis is an often-neglected tropical disease caused by blood flukes (helminths). The World Health Organization estimates that over 250 million people require preventive treatment for schistosomiasis. The only drug currently administered for this parasitic disease is Praziquantel, and preventive care necessitates repeated treatment for several years. While this drug does reduce the severity of the infection, there is concern that parasite resistance will emerge, and the only effective treatment will be rendered useless. Beyond the impact on human health, there is an equally concerning impact these worms have on livestock and companion animals. In cattle, the infection can lead to chronic disease that affects the animals' growth. Severe infections will often progress quickly and result in death. These outcomes can have significant economic consequences for the farmers and communities that depend on these livestock. A recent Market and Markets report estimates that the market for animal parasiticides targeted toward endoparasiticides will exceed $3 billion USD by 2026. While Praziquantel is also prescribed for animal hosts, the same concerns exist regarding emerging drug resistance. A new anthelmintic drug is needed that can effectively treat schistosomiasis in humans and animals.

The Invention

In the 1970s, Meclonazepam was identified as a potential antiparasitic drug compound. This benzodiazepine, while effective at targeting the worms, also yielded dose-limiting sedative side effects and was not pursued further. Now, researchers from the University of Wisconsin – Madison and the University of Wisconsin – Milwaukee have developed several non-sedating derivative compounds that demonstrate anthelmintic effects against the causative parasites of schistosomiasis. In mice, current lead compounds show a significant reduction in sedation when compared with Meclonazepam, and were effective against both adult worms and the juvenile stages.

Key Benefits

- Novel compounds effective at targeting the parasites that cause schistosomiasis
- Compounds are non-sedating derivatives of an effective antihelmintic benzodiazepine
- Lead compounds are effective against adult and juvenile stages of the parasites
- Initial testing in animal models yielded promising results
- Compounds are safe and cheap to manufacture

Stage of Development

Continued development, optimization, and testing are underway for the lead compounds.

Tech Fields

- Animals, Agriculture & Food : Animal health
- Drug Discovery & Development : Compound libraries

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- Therapeutics & Vaccines : Anti-infectives (antibacterials, antifungals, antivirals)

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