Selective HDAC6 Inhibitor for the treatment of Alzheimer's and related diseases

Technology #m10-078

Histone deacetylases (HDACs) are a family of proteins involved in a number of diseases. In particular, HDAC6 has been demonstrated as critical for the progression of Alzheimer’s disease and other central nervous system disorders such as Parkinson’s disease. This technology describes a group of compounds that selectively and potently inhibits the activity of HDAC6, potentially furnishing a new clinical option for the treatment of Alzheimer’s disease. Importantly, these compounds inhibit HDAC6 selectively over other subtypes of HDAC such as HDAC1. Such specific inhibition has not been observed in most HDAC inhibitors to date and could mitigate a significant amount of off-target toxicities observed with current pan-HDAC inhibitors.

Specific inhibition of HDAC6 over other HDAC subtypes could significantly reduce toxic side effects

Small molecules that inhibit all types of HDACs nonspecifically are well known and have been explored as therapeutic agents in a number of diseases. Their efficacy has been limited due to an inability to selectively inhibit one HDAC subtype over another. The compounds described in this technology have been demonstrated to bind HDAC6 100-fold more strongly than HDAC1. Such selectivity could significantly reduce toxicities associated with ubiquitous HDAC inhibition, potentially streamlining and reducing the cost of lead development and clinical trials.

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Applications:
- Treatment of Alzheimer’s disease through specific HDAC6 inhibition.
- Potentially useful for other central nervous system diseases such as Parkinson’s and Huntington’s.
**Advantages:**

- Compounds target HDAC6 with 100-fold selectivity over HDAC1.
- Specific and selective inhibition of HDAC6 offers a therapy for the treatment of Alzheimer’s and other neurological diseases while potentially minimizing off-target toxicities caused by pan-HDAC inhibitors.

**Patent information:**

Patent Pending (WO/2011/46855)

Tech Ventures Reference: IR M10-078

**Related Publications:**


**Inventors**

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