Novel Bexarotene Analogs & Derivatives


Invention Description

Bexarotene (Targretin®) is a synthetic retinoid analog used to treat cutaneous T-cell lymphoma (as well as off label to treat other types of cancer). Moreover, recent research may show great potential in its use for treatment of Alzheimer’s disease. Bexarotene is especially effective because it has specific high affinity for retinoid X receptors (RXR), enabling regulation of RXR genes to slow or stop cell proliferation of cancer cells. Despite these advantages, there are major drawbacks to the use of Bexarotene due to side effects which include hypothyroidism, hyperlipidemia, and cutaneous toxicity.

Researchers at Arizona State University have developed slightly more potent analogs that may provide alternatives to Bexarotene. These analogs have a higher selectivity for the retinoid X receptor versus the retinoic acid receptor (RAR). Additionally, in astrocytes and microglia, these Bexarotene analogs increase expression of ApoE and highly lipidated HDLs, which then promote clearance of amyloid beta in the brain.

These new analogs may provide viable and efficacious alternatives to Bexarotene for cancer, Alzheimer’s disease (AD), Parkinson’s disease (PD), schizophrenia, and other neurodegenerative diseases.

Potential Applications

- Anti-cancer treatment
  - CTCL, Colon and others
- Drug discovery
- May be useful in treatment of AD & other neurodegenerative diseases
- May be useful in treatment of RXR-pathway related diseases
- May be useful in treatment of diseases associated with dopamine deficiency
  - PD, schizophrenia, depression, etc.
- May be useful in treatment of non-insulin dependent diabetes mellitus

Benefits and Advantages

- Several analogs demonstrate higher affinity/activation for RXR than Bexarotene
- Higher efficacies/potency-specificity may allow for lower doses thus alleviating some side effects
- May stimulate gene expression better than Bexarotene