

## Abstract View

### A NOVEL NONANTIBACTERIAL TETRACYCLINE THAT HAS POTENTIAL IN THE TREATMENT OF MULTIPLE SCLEROSIS

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Multiple Sclerosis (MS) is a chronic debilitating disease of the central nervous system affecting over 2 million people worldwide. While the currently approved therapies for MS are a significant advance in the treatment of the disease, their injectable route of delivery, side effect profile, and lack of complete efficacy leave significant room for improvement. Recently there has been an increasing body of published information demonstrating the potential of the orally available small molecule minocycline (Mino), a member of the tetracycline class of antibiotics, for the treatment of MS. The potential of the compound to treat MS is thought to be due to the anti-inflammatory properties of the drug and unrelated to its antibacterial activity. We have evaluated Mino and a chemically novel non-antibacterial tetracycline compound using *in vitro* assays of anti-inflammatory activity, cytotoxicity and phototoxicity. We show clear differences in the activity of the compounds using these *in vitro* assays. In addition, we tested the compounds in a model of experimental autoimmune encephalomyelitis (EAE). We demonstrate that a novel non-antibacterial tetracycline, can also function to significantly alter the course of EAE. These data suggest that improved compounds structurally related to Mino, but lacking antibacterial activity, can be developed that may offer significant advantages with regards to safety and efficacy. **Conflict of Interest:** The authors are all employees of Paratek Pharmaceuticals a for profit company. **Off-label Drug Use:** Minocycline has been tested in a clinical trial for treatment of relapsing remitting multiple sclerosis.