Acknowledgements

Tackling Cancer by Drug Design
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Research Abstract

The thyroid hormone antagonists, Tetrac and Triac, are anticancer molecules that inhibit the growth and division of cells and angiogenesis, the development of new blood vessels. We attempted to deiodinate two iodines attached to the Tetrac molecule that are not part of the molecule’s anti-cancer properties. This will remove unnecessary bulk to the molecule, which may improve its angiogenesis activity.

Experiment

We followed the deiodination procedure used by Talekar et al. for ortho-iodo hydroxylated arenes, but applied the deiodination method to Tetrac as opposed to ortho-iodinated phenol molecules. We refluxed each solvent for a couple hours with Tetrac and H2O as a catalyst.
Solvents:
• N-methylmorpholine (NMM)
• Pyridine
• Triethylamine (TEA)
The products were then purified and analyzed by NMR spectroscopy to determine their structure.

Chemical Results

We followed the deiodination procedure used by Talekar et al. for ortho-iodo hydroxylated arenes, but applied the deiodination method to Tetrac as opposed to ortho-iodinated phenol molecules. We refluxed each solvent for a couple hours with Tetrac and H2O as a catalyst.

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Biological Results

Effect of Deiodinated Product on Pro-Angiogenesis

Hemoglobin assay was performed for evaluation of angiogenesis activity of the deiodinated Tetrac (MR-49) compared to Tetrac and Triac (T3). Our results showed higher activity of MR-49 among them.

Acknowledgements

I’d like to thank the Albany College of Pharmacy and Health Sciences for providing me with an internship opportunity. I’d like to thank Dr. Mehdi Rajabi and Dr. Shaker Mousa for providing me with the opportunity to be a research assistant. I’d also like to thank Dr. Kimberly Sullivan for advising me throughout my internship and research.

References