



Cases #565 and #578

Cymanquines: Metallo-Chloroquine Therapeutics

Inhibition of autophagy has become an attractive target for the clinical management of drug resistant cancers. Towards this end, the potent anti-malarial chloroquine (CQ) has been explored as an autophagy inhibitor in multiple studies. Unfortunately, CQ's inability to exhibit cytotoxic effects in the low PH tumor microenvironment has presented some limitations for this use.

In response to these CQ limitations, UVM researchers developed a novel organometallic analog of CQ, cymanquine (CymQ). CymQ displays superior single agent cytotoxicity compared to CQ and other CQ analogs, while maintaining that cytotoxicity at low PH. In addition to its use as an autophagy inhibitor for cancer therapy, CymQ also shows improved anti-malarial activity and may have therapeutic capabilities in other diseases with autophagy disorders, such as SLE/Lupus.

Applications:

- Treatment of cancers.
- Anti-Malarial therapeutic.
- Treatment of other autophagy disorders.

Advantages:

- Low steric bulk allows CymQ to cross membranes and be metabolized.
- Cytotoxic in the acidic tumor microenvironment.
- Low tendency to undergo oxidation in vivo, reducing side effects.

Intellectual Property and Development Status:

US Non-Provisional Application US20180022771A1

US Non-Provisional Application WO2017015344A1

Ready for research and development collaboration and licensing.

References:

Novel organometallic chloroquine derivative inhibits tumor growth
J Cell Biochem. 2018 Mar 25. doi: 10.1002/jcb.26787

Synthesis and anodic electrochemistry of cymanquine and related Complexes
Journal of Organometallic Chemistry 817 (2016) 15e20

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