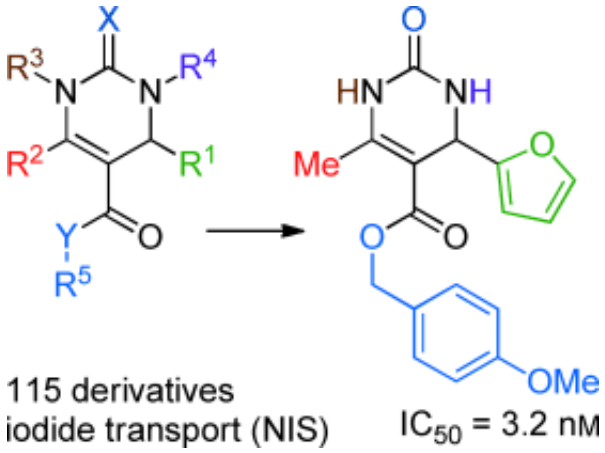
Blocking iodide transport by inhibiting the sodium iodide symporter

November 8 2012



(Phys.org)—Iodide entrapment in the thyroid gland is essential, and plays a key role in dysfunctions such as thyroid and breast cancers, thyroiditis, Graves–Basedow disease, and Hashimoto's disease. The accidents at Chernobyl and Fukushima have revealed growing public concerns, as exposure to radioactive iodine increases the risk of cancer and birth defects. There is an urgent need to find radioprotective molecules to prevent and treat body contamination.

Yves Ambroise and colleagues at the Biology and Technology Institute (IBiTecS, France) identified an important class of compounds that efficiently block iodide transport by inhibiting the sodium iodide

symporter, and their results are reported in *ChemMedChem*.

During a hit optimization program, they synthesized and tested more than 100 molecules for their capacity to block iodide entrapment in rat thyroid cells. They identified a new lead compound with nanomolar activity and low toxicity.

This discovery opens new perspectives for the development of novel anti-thyroid drugs and radioprotective molecules, as well as pharmacological tools for further investigation of iodide traffic at the cellular level.

More information: Ambrose, Y. Synthesis and Evaluation of 3,4-Dihydropyrimidin-2(1H)-ones as Sodium Iodide Symporter Inhibitors. *ChemMedChem* 2013, 8, No. 1. dx.doi.org/10.1002/cmdc.201200417

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