SYNTHESIS OF PHOTOACTIVABLE CAGED CYCLOFEN-OH

A new method for the synthesis of caged inducers that enables the photoactivation of proteins with spatial and temporal control.

Context
Revealing and understanding the spatial and temporal dynamics of biological cells is a major goal in biology. The development of means to control spatially and temporally protein interactions is a major issue in this respect. Photoactivation methods are used to control the activity of proteins, and photo-releasing cyclofen-OH from a caged precursor is an efficient strategy to restore the function of a protein fused to the steroid receptor ERT.

Prior route of synthesis of caged precursors have many limitations (not reproducible, low yield, purification step) which prevent scale-up process.

Invention description
The invention is a new process for manufacturing photoactivable caged precursors: caged cyclofen-OH and derivatives or salts thereof.

Synthesis route

Added value
The invention present many advantages. The proposed route of synthesis of cyclofen-OH is reproducible, and enables a twofold increase in the overall yield, with respect to prior art. It implies no significant purification steps and is suitable for scale-up.

Potential market
Physiological studies (tumorigenesis, somitogenesis, apoptosis…) at the cellular scale:

- Control of gene expression.
- Control of protein activity at any developmental stage.
- Cell-specific permanent genetic modifications.
- Labelling and monitoring in live animals.
Intellectual property and publications

Patents (pending)
EP3266771
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Scientific publication

Keywords
Photoactivable caged inductors; Cyclofen-OH; Photoactivation of protein functions

Technology domain
Bio-chemistry; Cellular biology; Protein interactions

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