IDF INNOV

From invention to innovation

HYCO : A NOVEL CLASS OF ANTI-INFLAMMATORY COMPOUNDS

A new class of hybrid compounds with a dual biological activity : an Nrf2 activator and a CO-releasing molecule (CO-RM).

Nrf2 ▪ CO ▪ Chemical compound ▪ Anti-inflammatory ▪ Cardiovascular ▪ Psoriasis ▪ Multiple Sclerosis

APPLICATIONS

- Treatment of inflammatory diseases, multiple sclerosis, psoriasis
- Cardiovascular protection
- Treatment of obesity

DEVELOPMENT PHASE

- Hit to lead optimization on *in vitro* human cell line models and *in vivo* LPS-induced inflammation mice model
- Ongoing *in vivo* efficacy in mice disease models

PUBLICATIONS

- Wilson JL & al., Chemistry 2014
- Motterlini, R. & Foresti, R. Antioxydants & Redox signaling 2014
- Motterlini R & Otterbein LE, Nature Review Drug Discovery 2010

INTELLECTUAL PROPERTY

- PCT application WO2015140337
- Two priority patent applications filed on sept. 2015

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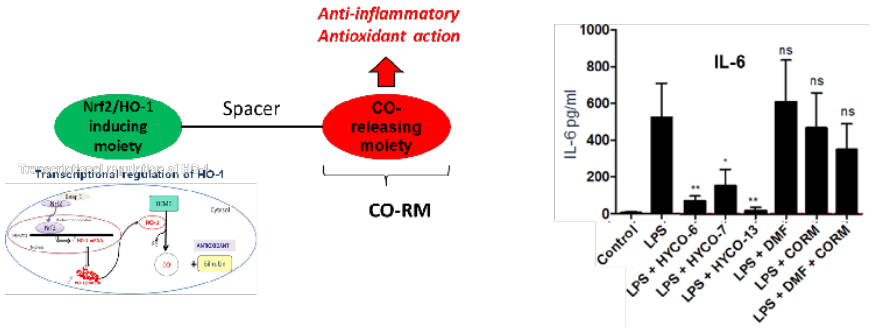
PRESENTATION

The transcription factor Nrf2 and carbon monoxide (CO) are essential protective systems against oxidative stress and inflammation. The exploitation of these cellular systems may offer new therapeutic avenues in a variety of diseases.

The present offer relates to the development of **a novel class of anti-inflammatory chemical compounds called HYCO, able to activate the Nrf2/HO-1 axis in cells as well as liberate CO**. On in vitro models, the addition of these compounds reduces the production of inflammatory markers in different cell lines (macrophages, monocytes, keratinocytes, microglia...). The hit compounds have shown a better anti-inflammatory activity compared to CO-RM and dimethylfumarate (DMF), without cytotoxicity.



Presentation of the dual biological activity: Nrf2 activation and CO release (left); Effect on 3 HYCO compared to DMF, CO-RM and their combination on THP1 cells challenged by LPS

COMPETITIVE ADVANTAGES

- Novel class of anti-inflammatory chemical entities
- Novel therapeutic approach with a dual biological activity
- Better efficacy compared to DMF, CO-RM and their combination