

# AN INNOVATIVE APPROACH FOR MULTIPLE MYELOMA TREATMENT

Multiple myeloma (MM) is the second most prevalent hematological cancer after non Hodgkin's lymphoma (10-12%) and is responsible for 2 % of cancer death.

In MM, the bone-marrow microenvironment (constituted by mesenchymal stromal cells, "MSC") is pivotal to the establishment and progression of the pathology and MM plasma cell growth. MM-MSC are abnormal and overexpress Toll like receptor 4 (TLR 4).

EFS researchers have found that TLR4 is overexpressed on MM MSCs and its activation promotes the crosstalk with MM cells in enhancing pro-tumoral factors.

EFS proposes a novel therapeutic approach for MM comprising a TLR4 specific antagonist combined to chemotherapy treatment.

cells.

## INVENTION:

An innovative method of multiple myeloma treatment targeting TLR4 with a specific antagonist that strengthens conventional MM therapy and weakens MM development in vivo.

This invention was developed by the EFS laboratory located in Toulouse.

## KEYWORDS:

Multiple myeloma treatment, Toll-Like receptor 4 (TLR4), TLR4 specific antagonist, MM plasma cells, chemotherapy agent.

## DESCRIPTION:

The research team highlighted a higher TLR4 gene expression in MM MSCs than MSCs from healthy donors. At clinical levels, TLR4 expression in MM MSCs evolves in parallel with the disease stage.

Thus, the EFS research team has evaluated the therapeutic efficacy of a TLR4 antagonist combined or not with conventional treatment in vitro and in vivo. The selective TLR4 inhibitor alone and to a greater extent, its combination with current MM drugs, specifically reduced the MM MSC ability to support growth of MM cells and delayed the development of MM in the Vk\*MYC mouse model.

These results confirm TLR4 as an attractive therapeutic target of the pathological microenvironment in MM.

## ADVANTAGES:

- First drug targeting the bone marrow MSCs and tumor microenvironment in MM
- Combination treatment suggests lower doses of conventional treatment agents used leading to less side effects and less therapy costs
- TLR4 specific antagonist can distinguish pathological and healthy microenvironment
- Treatment compatible with induction or consolidation phases
- Treatment compatible with any kind of route of administration (oral, sublingual, dermal, transdermal...)

## APPLICATIONS:

Treatment for patients with multiple myeloma

## CONTACTS

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