

Efficacy boost for dendritic cell therapies

Reference No: B73083

CHALLENGE

Dendritic cells (DCs) present antigens and thus can activate T-cells for a specific immune response, e.g. against tumor cells or infectious microbes. Autologous DCs for tumor immunotherapies are generated from patient's blood before being matured, loaded with tumor antigens *ex vivo* and finally transferred back into the patient to provoke a systemic anti-tumor response.

Maturation or activation of the DCs is a critical step for DC tumor immunotherapy, because it is directly related to the DC's T-Cell priming capacity. Therefore, a protocol for improved DC activation could strongly increase the efficacy of existing DC-based therapies.

INNOVATION

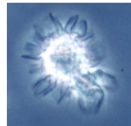
The innovation describes the use of the enzyme galactose oxidase (GOX) to improve the immunogenicity of DCs. This leads to a stronger physical interaction between DCs and T cells, resulting in an up to 10-fold improved T cell priming capacity. *In vitro* assays (mouse & human) showed strongly **enhanced T cell priming potential and T cell proliferation** when using GOX-treated DCs, and mice treated with a corresponding DC therapy showed **markedly reduced tumor growth and better survival** compared to DC treatment without prior GOX-based activation. In addition, low-affinity T cells, which are usually unresponsive and thus are a common challenge for immune therapies with (self)-tumor antigens, can be activated by GOX-treated DCs, resulting in a highly improved anti-tumor response.



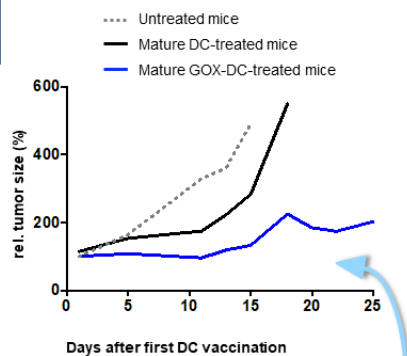
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Efficient enzymatic activation of DCs

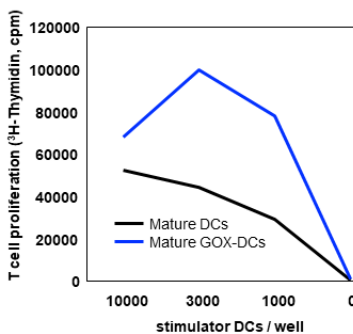
- Improves existing DC based therapies
- Enzymatic treatment with GOX



Inhibition of murine tumor growth



Stimulation of allogenic human T cells



Efficacy boost for T cell therapies

COMMERCIAL OPPORTUNITIES

The innovation can **markedly improve existing DC-based cell therapies**, for example in tumor or HIV treatments.

DEVELOPMENT STATUS

Proof of concept. *In vitro* mouse and human data, *in vivo* mouse data.



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