

Cardiogenesis inducing synthetic small molecules

TECHNOLOGY

Researchers of the Vienna University of Technology and the Medical University of Vienna have found that cardiomyocyte-like cells may be obtained not only from omnipotent or pluripotent mammalian cells, but also from lineage committed cells, such as skeletal myoblasts when cultured in the presence of substituted pyridine- and pyrimidine-compounds displaying potent cardiomyogenic activity like induction of beating heart cells in a mouse model.

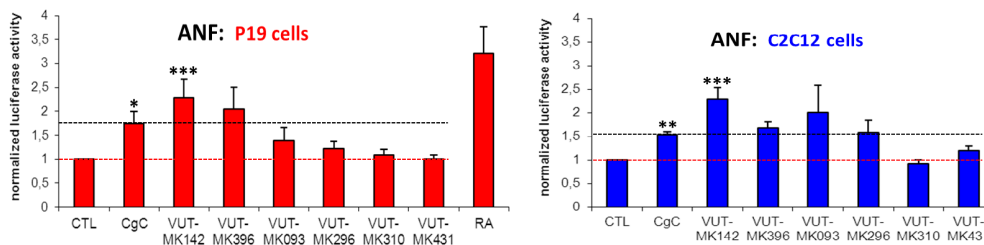


Figure 1: Screen for cardiomyogenesis using an ANF promoter reporter assay. P19 (left) and C2C12 (right) cells were treated with single compounds in a concentration of 1 μ M for 7 days.

In particular, these novel compounds may be used to produce cardiomyocyte-like cells (CMCs) from cells originating from a patient, for the treatment of disorders associated with the heart. Such treatment may e.g. be carried out by injection of cells which are produced by treating the omnipotent, pluripotent or lineage committed individual cells with these compound(s). Such treatment may improve damaged regions of the heart and may induce improved regeneration in regions which are damaged, e.g. by myocardial infarction.

Two patent families had been filed identifying two structurally independent leads for further elaboration.

NEXT STEPS

- Activity testing in human cells
- Toxicological assessment
- Re-implantation studies of treated reprogrammed cells

OPTIONS

- R&D cooperation
- Expertise

REFERENCE

M022/11

APPLICATIONS

- Cell transplantation therapy after myocardial infarction
- Treatment of heart diseases

DEVELOPMENT STATUS

- New compounds with potent cardiomyogenic activity identified
- Induction of beating heart cells was achieved on a mouse model

KEYWORDS

- cardiomyocyte-like cells
- treatment of heart diseases

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