

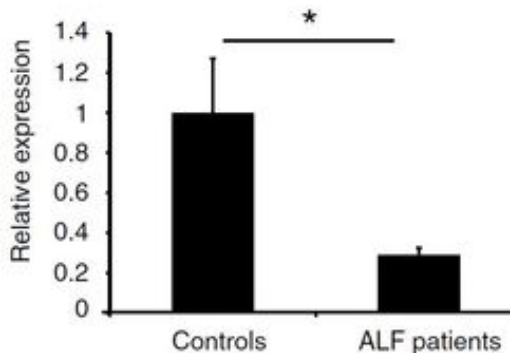
Technology Offer

MicroRNA-125b-5p – a new treatment option for drug induced Acute Liver Failure

Reference Number 15-00436

Challenge

Acute liver failure is a life threatening condition which is based on necrosis of hepatocytes and leads to subsequent liver- and multi-organ-failure. The most common etiologies for acute liver failure (ALF) are drug induced toxicity (<70 %) and viral infections (<10 %). Amongst them, Acetaminophen (APAP, paracetamol) overdose has emerged as the most frequent cause for ALF. One of the major obstacles in treatment of ALF is the lack of suitable mechanistic biomarkers and therapeutic anti-ALF agents. To date, the only available treatment for acute liver failure is organ replacement by transplantation. However, due to a shortage of organs there is a strong need for the development of alternative therapeutic approaches to extend the lifetime of critically ill patients.



Decreased endogenous level of miR-125b-5p in liver biopsies obtained from ALF patients, compared with respective controls.

Technology

The present invention comprises the use of miRNA-125b-5p as a therapeutic agent for treatment of acute liver failure. Investigational studies in an APAP-induced ALF mouse model and *in vitro* analysis in human hepatocytes showed that cell death is remarkably reduced by miR-125b-5p-overexpression after ALF induction. These and further results demonstrate that microRNA-125b-5p prevents progression of acute liver failure and represents a very promising therapeutic approach for the treatment of acute intoxication by APAP. Furthermore, the identified reduction of endogenous miR125-b-5p level in ALF patients indicates that miR125-b-5p is also a valuable biomarker for the early identification of patients at risk of ALF.

Commercial Opportunity

In-licensing or collaboration for further development is possible.

Development Status

Initial proof-of-concept studies have been performed at Hannover Medical School.

Patent Situation

European patent (EP 3254683 B1) granted and validated in DE, FR, GB, CH. Further patents haven been granted in USA (US 11,123,358 B2) and China (CN 109641010 B).

Further Reading

Yang D, Yuan Q, Balakrishnan A, Bantel H, Klusmann J, Manns MP, Ott M, Cantz T, Sharma AD. MicroRNA-125b-5p mimic inhibits acute liver failure. *Nat Commun.* 7:11916.

Jaeschke H. 2015. Acetaminophen: Dose-Dependent Drug Hepatotoxicity and Acute Liver Failure in Patients. *Dig Dis.* 2015;33:464-471.