Technology Offer

Inhibitors of Adipose Triglyceride Lipase (ATGL) for the treatment of Diabetes II and tumor-induced cachexia

The University offers a new technology addressing at least the two markets of tumor-induced cachexia and diabetes type II. Cancer has become a constantly increasing problem and thus about 1 % of all people in highly developed countries are hit by cachexia, leading to approximately 9 million patients for Europe, Japan and the US. Furthermore, diabetes type II is one of the major lifestyle diseases in the modern world.

Background

Adipose triglyceride lipase (ATGL) is rate-limiting in the degradation of cellular lipid stores. Thus, the enzyme strongly determines the concentration of circulating free fatty acids (FAs) and their availability for energy conversion in tissues. Elevated circulating FA concentrations are strongly associated with common metabolic diseases, such as type II diabetes and metabolic syndrome. Mice with genetic deletion of ATGL are resistant to diet-induced diabetes and cancer-associated weight loss (Cancer cachexia). This highlights ATGL as a promising pharmacological target.

Technology

Administration of small molecule inhibitors for ATGL leads to a significant reduction in the release of FA from lipid stores in vitro and in vivo. Especially diabetes type II and tumor-induced cachexia are highly relevant targets to be antagonized with these inhibitors. Furthermore, the synthesized compounds allow a tissue specific design that reduces the possibility of drug-related side effects. Results of toxicity analyses have been negative.

- Chemical synthesis of ATGL inhibitors
- Screening for inhibition of lipolysis in vitro and in vivo

Market

The estimation of the total market volume for therapy of tumor-induced cachexia is more than one billion US-$. About two million patients related to tumor-induced cachexia in the most important industrial countries are predicted by 2018. Up to now, no approved drugs for tumor-induced cachexia are available.

WHO estimates 346 million people affected by diabetes type II in 2011. For 2018 about 50 million people are thought to be affected by diabetes type II. Also in China and India the number of patients will increase tremendously to about 50 (India) and 90 (China) million people.

Picture: The Jackson Laboratory; ob/ob mice (diabetes model)

Potential Applications

- treatment of tumor-induced cachexia
- treatment of diabetes type II

Development Status

application approved

Status of the Patent

US patent pending

Patent application Number US 61/755,332

Cooperation Options

License agreement, Ownership agreement, Cooperation agreement

Contact

University of Graz
Office of Research Management and Service
DI (FH) Michael Freidl, M.A.

Tel.: (0043)-316-380-3994
Fax.: (0043)-316-380-9034
e-mail: michael.freidl@uni-graz.at

Our Reference: ATGL Inhibitor

Department of Molecular Biosciences
Prof. Dr. Robert Zimmermann

Tel.: (0043)-316-380-1914
e-mail: robert.zimmermann@uni-graz.at
http://molekularbiologie.uni-graz.at/