Novel Bile Acid Conjugates for Treatment of NAFLD/NASH and Obesity (Yissum)

code: 7-2011-2563

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Categories	Fatty liver, metabolic syndrome, obesity
Development Stage	Drug at preclinical stage
Patent Status	U.S. Provisional Patent Application No. 61/921,558
Market Size	6 million Americans with NASH, and more than 25 million expected by 2025, 90 million suffering from NAFLD. 1.4 billion are obese or overweight worldwide.

Background

- Fatty liver disease - Non alcoholic fatty liver disease (NAFLD) is a continuum of diseases that include simple steatosis and non-alcoholic steatohepatitis (NASH) ultimately leading to cirrhosis, hepatocellular carcinoma (HCC) and/or end stage liver failure which develop in the absence of excessive alcohol intake. NAFLD affects 30% of the general population and 70-80% of diabetic and obesity patients. Simple steatosis is most often considered to have a benign hepatic pathological prognosis. NASH, as oppose to steatosis is pathologically characterized by the presence of steatosis and inflammation, and is related to higher morbidity and mortality. NASH is accounted for liver related complications, and it is one of the leading causes of liver transplantation.
- Obesity - Worldwide obesity has nearly doubled since 1980. In 2008, more than 1.4 billion adults were overweight. Of these over 200 million men and nearly 300 million women were obese. 35% of adults aged 20 and over were overweight in 2008, and 11% were obese. More than 40 million children under the age of five were overweight in 2011 (World Health Organization). The prevalence of obesity today varies nearly tenfold among OECD countries, from a low of 2.1% in India, to 30% or more in the United States and Mexico (OECD obesity update 2012).

Our Innovation

- The aim of this project is to develop a novel bile acid related small molecule that can be used to treat NAFLD and NASH. For that reason we have synthesized an Arginine-bile acid conjugate (CDCArg) that was tested in animal nutritional models of NAFLD and obesity.
- The compound is highly effective in preventing nutritional-induced NASH/NAFLD
- The compound is highly effective in treating nutrition-induced NASH/NAFLD
- The compound was effective in lowering body weight of obese high fat diet fed mice.

Key Features

- A novel, orally administered, treatment for NAFLD and obesity
- Non-toxic

- Significantly lowering lipids absorption with no effect on protein absorption

Development Milestones

- Modifying molecules in order to develop a second generation compounds with optimized potency.
- Exploring other possible mechanisms of action
- Combination with other drugs (optional)
- Moving forward towards human clinical trials

The Opportunity

- Huge potential market.
- Unmet medical need.

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