Methods of Discovering New Bile Acids and Use in Treating Inflammatory Diseases

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BACKGROUND

A mosaic of cross-phyla chemical interactions occurs between all metazoans and their microbiomes. In humans, the gut harbors the heaviest microbial load, but many organs, particularly those with a mucosal surface, associate with highly adapted and evolved microbial consortia. The microbial residents within these organ systems are increasingly well characterized, yielding a good understanding of human microbiome composition. However, we have yet to elucidate the full chemical impact the microbiome exerts on an animal and the breadth of the chemical diversity it contributes. A number of molecular families are known to be shaped by the microbiome including short-chain fatty acids, indoles, aromatic amino acid metabolites, complex polysaccharides, and host sphingolipids and bile acids. These metabolites profoundly affect host physiology and are being explored for their roles in both health and disease.

The synthesis of bile acids takes place in the liver and recent research has shown that bile acids can act as signaling molecules and activate a number of molecules. A primary focus has been on the Farnesoid X receptor (FXR) which plays an important role in bile acid synthesis and in regulation of glucose, lipid and energy metabolism.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have identified new Bile Acids (BA) and the microbes that produce them. In addition, the inventors have developed compositions, methods of synthesis, and methods of use for newly identified BA. In particular, some is these BAs have been found to exhibit very potent FXR agonism. Correspondingly, the disease areas would include metabolic diseases including nonalcoholic steatohepatitis (NASH), inflammatory bowel diseases, liver diseases and diabetes.

APPLICATIONS

The invention provides a method of treating a subject by administering an effective amount of a bile acid conjugate to the subject or else the microorganisms that produce the bile acid conjugate in question.

ADVANTAGES

The invention is useful by detecting the bile acid conjugates levels we can assess disease severity and type of disease.

STATE OF DEVELOPMENT

The current stage of development is in the experimental data stage.

INTELLECTUAL PROPERTY INFO

This technology is patent pending and available for licensing and/or research sponsorship.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

Nonalcoholic steatohepatitis, acyl carnitine regulation, Cancer, Chronic intestinal diseases, Diabetes, FXR, liver disease

CATEGORIZED AS

- Medical
  - Disease: Digestive System
  - Disease: Metabolic/Endocrinology
  - Screening

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