Screening Assays Based on Stearoyl-CoA Desaturase for Diseases Related to Serum Levels of Triglycerides and VLDL

Published date: March 14, 2017

Technology description

Many cardiovascular diseases and other disorders result from problems with the metabolism of cholesterol, a major component of normal animal cell membranes. Stearoyl-CoA desaturase 1 (SCD1) is the rate-limiting enzyme in the biosynthesis of monounsaturated fatty acids like oleate and palmitoleate, which are major constituents of triglycerides and cholesterol esters. SCD1 is thought to influence obesity, atherosclerosis and other metabolic disorders associated with changes in lipid composition. UW–Madison researchers have developed screening assays using human stearoyl-CoA desaturase 1 (hSCD1). The researchers discovered that a number of human diseases and conditions are the result of aberrant hSCD1 biological activity. They also found that hSCD1 is directly related to serum levels of triglycerides and VLDL.

The assays are based on the role of hSCD1 in disorders relating to serum levels of triglycerides, VLDL, HDL, LDL or total cholesterol or production of secretions from mucous membranes, monounsaturated fatty acids or wax esters. They may be used for identifying therapeutic agents that modulate the biological activity or expression of hSCD1 and thus may be useful in the treatment of diseases such as atherosclerosis, diabetes or cancer.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing screening assays based on the role of human stearoyl-CoA desaturase in diseases and disorders such as obesity and atherosclerosis.

Additional Information

Attie et al. 2002. Relationship between Stearoyl-CoA Desaturase Activity and Plasma Triglycerides in Human and Mouse Hypertriglyceridemia. J. Lipid. Res. 43, 1899-1907.

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Application area

Identifying agents useful in the treatment of human disorders relating to serum levels of triglyceride, VLDL, HDL, LDL or cholesterol
Identifying cSNPs (coding region single nucleotide polymorphisms) in hSCD1 that are associated with human disease processes or responses to medication

Advantages

Identifies—for the first time—the role of hSCD1 in a wide range of human diseases and conditions
May lead to new treatments for those human disorders related to aberrant hSCD1 activity

Institution

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