

# Small Molecule Therapy for Obesity, Dyslipidemia, and Metabolic Disease

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## Technology description

### BACKGROUND:

Cardiovascular disorders are leading causes of death worldwide and products have been developed to treat several of their addressable risk factors. Today's market for anti-hypertensive agents is \$35 billion and dyslipidemia treatments is \$30 billion. While these therapies have been effective in the majority of patients in lowering blood pressure and LDL (low-density lipoprotein), they do not address other major cardiovascular risk factors such as obesity, lipoprotein (a), HDL (high-density lipoprotein), and triglyceride levels. There is an unmet need for new agents that can be used alone or in combination with existing therapies to address these more elusive risk factors.

### DESCRIPTION:

Researchers at University of California San Francisco and Oregon Health Sciences University have discovered a new class of thyroid hormone metabolites. The most potent of these, 3-iodothyronamine, has been shown in animal studies to completely switch fuel utilization away from carbohydrates and toward lipids. In single dose hamster studies this lipid-burning effect was sustained for 24 hours, several hours after the compound had been excreted. Further studies showed both reduced LDL and significant weight loss that was selective for fat mass vs. lean mass. 3-iodothyronamine is known to be an endogenous chemical derivative of thyroid hormone, a key hormone in regulating basal metabolic rate, protein synthesis, bone growth, neuronal maturation, and metabolism of lipids and carbohydrates.

### Related Cases

2003-C14-0

## Application area

Treatment of obesity, dyslipidemia, and metabolic disease

## Advantages

Animal studies indicate 3-iodothyronamine has both weight reducing effects as well as LDL-lowering capabilities

Natural occurrence as a thyroid hormone derivative points toward favorable toxicity profile

Unlike thyroid hormone, 3-iodothyronamine does not increase heart rate

## Institution

[University of California, San Francisco](#)

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