



US009408410B2

(12) **United States Patent**
Zemel et al.

(10) **Patent No.:** **US 9,408,410 B2**

(45) **Date of Patent:** ***Aug. 9, 2016**

(54) **COMPOSITIONS, METHODS, AND KITS FOR REGULATING ENERGY METABOLISM**

(58) **Field of Classification Search**
CPC A23L 1/3051; A23L 1/302; A61K 31/155; A23V 2002/00

See application file for complete search history.

(71) Applicant: **NuSirt Sciences, Inc.**, Nashville, TN (US)

(56) **References Cited**

(72) Inventors: **Michael B. Zemel**, Knoxville, TN (US);
E. Douglas Grindstaff, II, Nashville, TN (US)

U.S. PATENT DOCUMENTS

(73) Assignee: **NuSirt Sciences, Inc.**, Nashville, TN (US)

4,606,909 A 8/1986 Bechgaard et al.
4,769,027 A 9/1988 Baker et al.

(Continued)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

FOREIGN PATENT DOCUMENTS

This patent is subject to a terminal disclaimer.

EP 1685833 A1 8/2006
EP 1818055 A1 8/2007

(Continued)

(21) Appl. No.: **14/927,228**

OTHER PUBLICATIONS

(22) Filed: **Oct. 29, 2015**

U.S. Appl. No. 14/442,711, filed May 13, 2015, Zemel et al.

(Continued)

(65) **Prior Publication Data**

US 2016/0113317 A1 Apr. 28, 2016

Primary Examiner — Trevor Love

(74) *Attorney, Agent, or Firm* — Wilson Sonsini Goodrich and Rosati

Related U.S. Application Data

(57) **ABSTRACT**

(63) Continuation of application No. 13/662,345, filed on Oct. 26, 2012, now Pat. No. 9,198,454.

The present invention provides for compositions, methods and kits for regulating energy metabolism. In one aspect, the invention provides for compositions that comprise a combination of (a) branched chain amino acids, such as leucine, and (b) vitamin B6, or any precursors or metabolites of (a) or (b). These combinations may be synergistic and/or effective for reducing weight or adipose volume. In another aspect, the invention provides for methods of regulating energy metabolism by the administration of one or more compositions comprising branched chain amino acids and vitamin B6. The invention also provides for kits comprising compositions of branched chain amino acids and vitamin B6 packaged in an oral dose form with usage instructions.

(60) Provisional application No. 61/608,595, filed on Mar. 8, 2012, provisional application No. 61/656,407, filed on Jun. 6, 2012.

(51) **Int. Cl.**
A61K 31/155 (2006.01)
A23L 1/305 (2006.01)
A23L 1/302 (2006.01)

(52) **U.S. Cl.**
CPC **A23L 1/3051** (2013.01); **A23L 1/302** (2013.01); **A61K 31/155** (2013.01); **A23V 2002/00** (2013.01)

16 Claims, 10 Drawing Sheets

RQ

