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

(10) **Patent No.: US 10,155,003 B2**
(45) **Date of Patent: Dec. 18, 2018**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

(71) Applicant: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

(72) Inventors: **Thomas J. Slaga**, San Antonio, TX (US); **Jacob Junco**, San Antonio, TX (US); **Huiyun Liang**, San Antonio, TX (US); **Sara Reyna**, San Antonio, TX (US)

(73) Assignee: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

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

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A61K 31/05	(2006.01)
A61K 31/19	(2006.01)
A61K 9/00	(2006.01)

(52) **U.S. Cl.**
CPC ***A61K 31/56*** (2013.01); ***A61K 9/0053*** (2013.01); ***A61K 31/05*** (2013.01); ***A61K 31/19*** (2013.01)

(58) **Field of Classification Search**
CPC A61K 31/05; A61K 31/19; A61K 31/56; A61K 9/0053
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Cherniack. "Polyphenols: planting the seeds of treatment for the metabolic syndrome." *Nutrition*, 2011, vol. 27, No. 6, pp. 617-623.

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Primary Examiner — My-Chau T. Tran
(74) *Attorney, Agent, or Firm* — Norton Rose Fulbright US LLP

(57) **ABSTRACT**

Certain embodiments are directed to methods and compositions for treating obesity, diabetes, and/or cancer with a combination of ursolic acid and resveratrol.

19 Claims, 4 Drawing Sheets

US010583145B2

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

(10) **Patent No.: US 10,583,145 B2**
(45) **Date of Patent: Mar. 10, 2020**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

(71) Applicant: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

(72) Inventors: **Thomas J. Slaga**, San Antonio, TX (US); **Jacob Junco**, San Antonio, TX (US); **Huiyun Liang**, San Antonio, TX (US); **Sara Reyna**, San Antonio, TX (US)

(73) Assignee: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

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(21) Appl. No.: **16/221,094**

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(65) **Prior Publication Data**

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(60) Provisional application No. 61/988,859, filed on May 5, 2014.

(51) **Int. Cl.**

A61K 31/56	(2006.01)
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A61K 31/05	(2006.01)
A61K 9/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A61K 31/56*** (2013.01); ***A61K 9/0053*** (2013.01); ***A61K 31/05*** (2013.01); ***A61K 31/19*** (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

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Primary Examiner — My-Chau T. Tran

(74) *Attorney, Agent, or Firm* — Norton Rose Fulbright US LLP

(57) **ABSTRACT**

Certain embodiments are directed to methods and compositions for treating obesity, diabetes, and/or cancer with a combination of ursolic acid and resveratrol.

20 Claims, 4 Drawing Sheets

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

(10) **Patent No.: US 11,166,962 B2**
(45) **Date of Patent: *Nov. 9, 2021**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

(71) Applicant: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

(72) Inventors: **Thomas J. Slaga**, San Antonio, TX (US); **Jacob Junco**, San Antonio, TX (US); **Huiyun Liang**, San Antonio, TX (US); **Sara Reyna**, San Antonio, TX (US)

(73) Assignee: **Board of Regents, The University of Texas System**, Austin, TX (US)

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

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(65) **Prior Publication Data**

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(60) Provisional application No. 61/988,859, filed on May 5, 2014.

(51) **Int. Cl.**

A61K 31/56	(2006.01)
A61K 31/19	(2006.01)
A61K 31/05	(2006.01)
A61P 3/04	(2006.01)
A61P 3/10	(2006.01)
A61K 9/00	(2006.01)

(52) **U.S. Cl.**

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(58) **Field of Classification Search**

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See application file for complete search history.

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Cho et al., "Effect of Combined Treatment with Ursolic Acid and Resveratrol on Skin Tumor Promotion by 12-O-Tetradecanoylphorbol-13-Acetate", 2015, Cancer Prevention Research, 8(9), pp. 817-825 (Year:2015).

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Primary Examiner — My-Chau T. Tran

(57) **ABSTRACT**

Certain embodiments are directed to methods and compositions for treating obesity, diabetes, and/or cancer with a combination of ursolic acid and resveratrol.

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

(10) **Patent No.: US 11,090,311 B2**
(45) **Date of Patent: *Aug. 17, 2021**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

(71) Applicant: **THE BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, Austin, TX (US)

(72) Inventors: **Thomas J. Slaga**, San Antonio, TX (US); **Jacob Junco**, San Antonio, TX (US); **Huiyun Liang**, San Antonio, TX (US); **Sara Reyna**, San Antonio, TX (US)

(73) Assignee: **Board of Regents, the University of Texas System**, Austin, TX (US)

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

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(51) **Int. Cl.**

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A61K 31/05	(2006.01)
A61P 3/04	(2006.01)
A61P 3/10	(2006.01)
A61K 9/00	(2006.01)

(52) **U.S. Cl.**

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(58) **Field of Classification Search**

None

See application file for complete search history.

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Primary Examiner — My-Chau T. Tran

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(12) **United States Patent**
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(10) **Patent No.: US 11,642,354 B2**
(45) **Date of Patent: *May 9, 2023**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

(71) Applicant: **Board of Regents, the University of Texas System**

(72) Inventors: **Thomas J. Slaga**, San Antonio, TX (US); **Jacob Junco**, San Antonio, TX (US); **Huiyun Liang**, San Antonio, TX (US); **Sara Reyna**, San Antonio, TX (US)

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A61K 9/00	(2006.01)

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(58) **Field of Classification Search**

None

See application file for complete search history.

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Primary Examiner — My-Chau T. Tran

(57) **ABSTRACT**

Certain embodiments are directed to methods and compositions for treating obesity, diabetes, and/or cancer with a combination of ursolic acid and resveratrol.

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

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(45) **Date of Patent: *Jul. 4, 2023**

(54) **METHODS AND COMPOSITIONS COMPRISING URSOLIC ACID AND/OR RESVERATROL FOR TREATING DIABETES, OR CANCER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 79 days.

This patent is subject to a terminal disclaimer.

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(51) **Int. Cl.**

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CPC ***A61K 31/56*** (2013.01); ***A61K 9/0053*** (2013.01); ***A61K 31/05*** (2013.01); ***A61K 31/19*** (2013.01); ***A61P 3/04*** (2018.01); ***A61P 3/10*** (2018.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

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