



US010576039B2

(12) United States Patent

Virno et al.

US 10,576,039 B2 (10) Patent No.: (45) Date of Patent: Mar. 3, 2020

(54) OPHTHALMIC FORMULATION COMPRISING CITICOLINE CARRIED BY LIPOSOME FOR THE TREATMENT OF **GLAUCOMA**

(71) Applicant: Omikron Italia S.r.l., Rome RM (IT)

(72) Inventors: Cristiano Virno, Rome RM (IT); Marco Malizia, Rome (IT)

(73) Assignee: Omikron Italia S.r.I., Rome (IT)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 16/342,261

(22) PCT Filed: Oct. 16, 2017

(86) PCT No.: PCT/IB2017/056400

> § 371 (c)(1), (2) Date:

Apr. 16, 2019

(87) PCT Pub. No.: WO2018/073720

PCT Pub. Date: Apr. 26, 2018 (65)**Prior Publication Data**

US 2019/0321292 A1

Oct. 24, 2019 (30)Foreign Application Priority Data

Oct. 17, 2016 (IT) 102016000103956

(51) Int. Cl. A61K 9/127 A61K 47/18

(2006.01)

(2017.01)

A61K 47/36 (2006.01)A61P 27/06 (2006.01)A61K 9/00 (2006.01)A61K 31/7068 (2006.01)A61K 9/08 (2006.01)

(52) U.S. Cl.

CPC A61K 9/127 (2013.01); A61K 9/0048 (2013.01); A61K 9/08 (2013.01); A61K 31/7068 (2013.01); A61K 47/18 (2013.01); A61K 47/36 (2013.01); A61P 27/06 (2018.01)

(58)Field of Classification Search None See application file for complete search history.

(56)References Cited

FOREIGN PATENT DOCUMENTS

ÉP	0114577 AI *	8/1984	A61K 9/127
WO			A61K 9/0019
wo	WO-2011101802 AI *	8/2011	A61K 9/0048

* cited by examiner

Primary Examiner - Nannette Holloman (74) Attorney, Agent, or Firm - Sterne, Kessler, Goldstein & Fox P.L.L.C.

ABSTRACT

The present invention relates to an ophthalmic formulation comprising citicoline and liposomes to be used in treating glaucoma. The inventors have found that the liposomes result to be particularly effective in carrying citicoline in the posterior segment of the eye (vitreous chamber) and in reaching the retina and the optic nerve head.

21 Claims, 2 Drawing Sheets