



(11) **EP 3 088 353 B8**

(12) **CORRECTED EUROPEAN PATENT SPECIFICATION**

(15) Correction information:  
**Corrected version no 1 (W1 B1)**  
**Corrections, see**  
**Bibliography INID code(s) 73**

(51) Int Cl.:  
**A61K 47/60** <sup>(2017.01)</sup> **A61K 47/69** <sup>(2017.01)</sup>  
**A61K 31/704** <sup>(2006.01)</sup> **B82B 1/00** <sup>(2006.01)</sup>  
**B82Y 5/00** <sup>(2011.01)</sup> **A61P 35/00** <sup>(2006.01)</sup>  
**A61P 29/00** <sup>(2006.01)</sup>

(48) Corrigendum issued on:  
**08.04.2020 Bulletin 2020/15**

(86) International application number:  
**PCT/KR2014/012912**

(45) Date of publication and mention  
of the grant of the patent:  
**18.12.2019 Bulletin 2019/51**

(87) International publication number:  
**WO 2015/099492 (02.07.2015 Gazette 2015/26)**

(21) Application number: **14875349.4**

(22) Date of filing: **26.12.2014**

(54) **BILIRUBIN PARTICLES AND THEIR PREPARATION FOR USE IN THERAPY**

BILIRUBINPARTIKEL UND DEREN HERSTELLUNG ZUR VERWENDUNG BEI DER THERAPIE  
PARTICULES DE BILIRUBINE ET LEUR PRÉPARATION POUR UTILISATION EN THÉRAPIE

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB**  
**GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO**  
**PL PT RO RS SE SI SK SM TR**

(30) Priority: **27.12.2013 KR 20130165718**

(43) Date of publication of application:  
**02.11.2016 Bulletin 2016/44**

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(56) References cited:  
**WO-A1-2008/130180 US-A1- 2004 013 717**  
**US-A1- 2007 015 816 US-A1- 2011 022 129**  
**US-A1- 2013 345 614 US-B1- 6 916 488**

- **STEFAN E. BOIADJIEV ET AL: "pKa and Aggregation of Bilirubin: Titrimetric and Ultracentrifugation Studies on Water-Soluble Pegylated Conjugates of Bilirubin and Fatty Acids", BIOCHEMISTRY, vol. 43, no. 49, 18 November 2004 (2004-11-18), pages 15617-15632, XP055317791, US ISSN: 0006-2960, DOI: 10.1021/bi0481491**
- **YONGHYUN LEE ET AL: "Bilirubin Nanoparticles as a Nanomedicine for Anti-inflammation Therapy", ANGEWANDTE CHEMIE INTERNATIONAL EDITION, vol. 55, no. 26, 4 May 2016 (2016-05-04), pages 7460-7463, XP055317213, DE ISSN: 1433-7851, DOI: 10.1002/anie.201602525**
- **YONGHYUN LEE ET AL: "Multistimuli-Responsive Bilirubin Nanoparticles for Anticancer Therapy", ANGEWANDTE CHEMIE INTERNATIONAL EDITION, vol. 55, no. 36, 3 August 2016 (2016-08-03), pages 10676-10680, XP055317220, DE ISSN: 1433-7851, DOI: 10.1002/anie.201604858**

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**EP 3 088 353 B8**

- PASHKOVSKAYA, A. ET AL.: 'Light-Triggered Liposomal Release: Membrane Permeabilization by Photodynamic Action' LANGMUIR vol. 26, no. 8, 10 December 2009, pages 5726 - 5733, XP055292129
- R Nagarajan: "Chapter 1 Amphiphilic Surfactants and Amphiphilic Polymers: Principles of Molecular Assembly" In: "Amphiphiles: Molecular Assembly and Applications", 1 January 2011 (2011-01-01) pages 1-22, DOI: 10.1021/bk-2011-1070,