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(56)	References Cited:	WO-A1-2015/183794 US-A1- 2013 273 175 FR-A1- 2 796 551 CN-A- 101 935 319 WO-A1-2006/029577

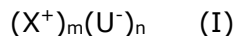
EP-A1- 0 510 404
 CN-A- 103 319 479
 CN-A- 103 989 677
 WO-A1-2014/183184
 EP-A1- 0 065 666
 EP-A1- 2 221 313
 CN-A- 101 113 149
 DATABASE WPI Week 201220 Thomson Scientific, London, GB; AN 2011-P68227
 XP002777694, -& CN 102 225 961 A (LI Q) 26 October 2011 (2011-10-26)
 DATABASE WPI Week 201317 Thomson Scientific, London, GB; AN 2013-A79535
 XP002777695, -& CN 102 702 190 A (NORTHEAST PHARM GROUP CO LTD) 3 October 2012
 (2012-10-03)
 Anonymous: "Berberine Support | Wellness Works - Pharmacy Care. Naturally.", , 1 April 2014
 (2014-04-01), XP55445006, Retrieved from the Internet:
 URL: <https://web.archive.org/web/20140401013834/http://www.wellnessworks.com/blog/2013/12/06/berberine-support/> [retrieved on 2018-01-26]
 Yang Liu ET AL: "Update on Berberine in Nonalcoholic Fatty Liver Disease", Evidence-Based
 Complementary and Alternative Medicine, vol. 2013, 1 January 2013 (2013-01-01), pages 1-8,
 XP055624299, ISSN: 1741-427X, DOI: 10.1155/2013/308134
 Naga Chalasani ET AL: "The diagnosis and management of non-alcoholic fatty liver disease:
 Practice Guideline by the American Association for the Study of Liver Diseases, American
 College of Gastroenterology, and the American Gastroenterological Association", Hepatology,
 vol. 55, no. 6, 29 May 2012 (2012-05-29), pages 2005-2023, XP055624306, ISSN: 0270-9139,
 DOI: 10.1002/hep.25762
 DATABASE WPI Week 198540 Thomson Scientific, London, GB; AN 1985-247079
 XP002788413, -& JP S60 163897 A (TOKYO TANABE CO) 26 August 1985 (1985-08-26)
 DATABASE WPI Week 201158 Thomson Scientific, London, GB; AN 2011-H91123
 XP002777693, -& CN 102 078 418 A (UNIV GUANGDONG PHARM) 1 June 2011 (2011-06-01)
 ZUN XIANG ET AL: "The role of Ursodeoxycholic acid in non-alcoholic steatohepatitis: a
 systematic review", BMC GASTROENTEROLOGY, BIOMED CENTRAL LTD., LONDON, GB,
 vol. 13, no. 1, 23 September 2013 (2013-09-23), page 140, XP021158787, ISSN: 1471-230X,
 DOI: 10.1186/1471-230X-13-140
 SIQIN GAOWA. ET AL.: 'The research progress of pharmacological activity of beberine from
 coptis' JOURNAL OF MEDICINE & PHARMACY OF CHINESE MINORITIES no. 1, 31 January
 2014, pages 49 - 51, XP008185289
 DATABASE WPI Week 200668 Thomson Scientific, London, GB; AN 2006-654339
 XP002788414, & KR 2005 0081477 A (CHEMGEN CO LTD) 19 August 2005 (2005-08-19)
 INDER PAL SINGH ET AL: "Berberine and its derivatives: a patent review (2009 - 2012)",
 EXPERT OPINION ON THERAPEUTIC PATENTS., vol. 23, no. 2, 12 December 2012 (2012-12-
 12), pages 215-231, XP55444683, GB ISSN: 1354-3776, DOI: 10.1517/13543776.2013.746314
 P.P. BASU ET AL: "P853 BERBERINE WITH ALFA LIPOIC ACID (ALA) IN NON ALCOHOLIC
 STEATO-HEPATITIS (NASH). A RANDOMIZED DOUBLE BLINDED PLACEBO CONTROL
 TRIAL. A CLINICAL PILOT - THE BANISH TRIAL", JOURNAL OF HEPATOLOGY, vol. 60, no.
 1, 1 April 2014 (2014-04-01), pages S356-79233, XP55444543, AMSTERDAM, NL ISSN: 0168-
 8278, DOI: 10.1016/S0168-8278(14)61014-X
 DATABASE WPI Week 200865 Thomson Scientific, London, GB; AN 2008-K98208
 XP002788415, -& CN 101 070 337 A (UNIV HUAZHONG SCI & TECHNOLOGY) 14 November
 2007 (2007-11-14)

Enclosed is a translation of the patent claims in Norwegian. Please note that as per the Norwegian Patents Acts,
 section 66i the patent will receive protection in Norway only as far as there is agreement between the translation
 and the language of the application/patent granted at the EPO. In matters concerning the validity of the patent,
 language of the application/patent granted at the EPO will be used as the basis for the decision. The patent

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Patentkrav

1. Syre-base addisjonssalt i hovedsakelig ren form av formel:

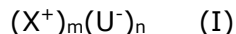


5 hvor

- (a) U^- er en anionisk enhet av ursodeoksykholinsyre;
- (b) X^+ er en kationisk enhet av berberine og
- (c) m er 1 og n er 1.

2. Farmasøytisk sammensetning omfattende

10 et syre-base addisjonssalt av formel:



hvor

- (a) U^- er en anionisk enhet av ursodeoksykholinsyre;
- (b) X^+ er en kationisk enhet av berberine og
- (c) m er 1 og n er 1 og

15

en farmasøytisk akseptabel eksipient, bærer eller fortynningsmiddel

20

for anvendelse ved behandling eller reduksjon av en eller flere sykdommer eller lidelser valgt fra fettlever, ikke-alkoholisk fettleversykdom (NAFLD) og ikke-alkoholisk steatohepatitt (NASH), cholestatiske leversykdommer, transplantat-mot-vert leversykdom, kroniske viral-assosierte leversykdommer, alkoholrelaterte leversykdommer, metabolske sykdommer eller lidelser så som pre-diabetes, diabetes, hyperlipidemi, diabetisk dyslipidemi, dyslipidemi i statin-intolerante pasienter, fedme eller en relatert sykdom eller lidelse derav.

3. Farmasøytisk sammensetning for anvendelse ifølge krav 2, hvor sykdommen eller lidelsen er pre-diabetes, diabetes eller hyperlipidemi, diabetisk dyslipidemi eller dyslipidemi i statin-intolerante pasienter, cholestatiske leversykdommer, transplantat-mot-vert leversykdom, kroniske viral-assosierte leversykdommer eller
- 5 alkoholrelaterte levresykdommer.
4. Farmasøytisk sammensetning for anvendelse ifølge krav 2, hvor sykdommen er NASH.
- 10 5. Farmasøytisk sammensetning for anvendelse ifølge krav 2, hvor sykdommen er NAFLD.
6. Farmasøytisk sammensetning for anvendelse ifølge krav 2, hvor sykdommen er cholestatiske leversykdommer.