



(51) International Patent Classification:

A61K 9/127 (2006.01) C07C 237/08 (2006.01)
C07C 271/22 (2006.01)

(21) International Application Number:

PCT/EP2013/000699

(22) International Filing Date:

11 March 2013 (11.03.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12001793.4 16 March 2012 (16.03.2012) EP

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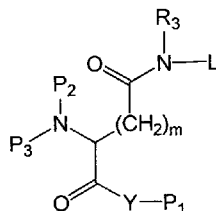
(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

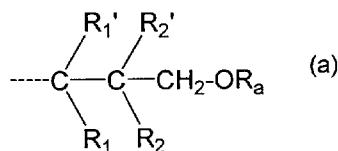
Published:

— with international search report (Art. 21(3))

(54) Title: AMINOACID LIPIDS



(I)



(a)

(57) Abstract: The present invention is directed to a new class of lipids, more specifically ether-lipids having a polar headgroup, as well as vesicles comprising these lipids, methods of their preparation as well as their uses in medical applications, wherein the ether-lipids are represented by general formula (I) wherein Y represents O, N, S or a covalent bond; P₁ represents H, an Y-protecting group or an Y-activating group or a spacer group; P₂, P₃ represent independently of each other H, an amino-protecting group or a spacer group, or P₂ and P₃ form together with the N to which they are bound a ring structure; L is a group of formula (a) wherein the dashed line represents the linkage to N; R₁ represents H or a group of formula -(CH₂)₂-OR_{b1}; R₁ represents H or a group of formula -(CH₂)₂-OR_{b2}; R₂ represents H or a group of formula -CH₂-OR_c; R₂ represents H or a group of formula -OR_d or -CH₂-OR_e; R₂ represents H or a group of formula -(CH₂)₂-OR_e or -(CH₂)₃-OR_e; R_a, R_{b1}, R_{b2}, R_c, R_d, R_e represent independently of each other a saturated or unsaturated, straight or branched hydrocarbon chain, and m is 1, 2 or 3; with the proviso that at least one of R₁, R_{1'}, R₂, R_{2'}, R₃ is not H.