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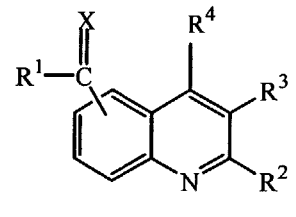
**Declarations under Rule 4.17:**

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

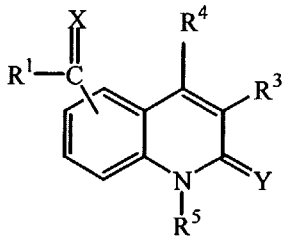
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

*[Continued on next page]*

(54) Title: RADIOLABELLED QUINOLINE AND QUINOLINONE DERIVATIVES AND THEIR USE AS METABOTROPIC GLUTAMATE RECEPTOR LIGANDS



(I-A)*



(I-B)*

(57) Abstract: The present invention is concerned with radiolabelled quinoline and quinolinone derivatives according Formula (I-A)* or (I-B)* showing metabotropic glutamate receptor antagonistic activity, in particular mGlu1 receptor activity, and their preparation ; it further relates to compositions comprising them, as well as their use for marking and identifying metabotropic glutamate receptor sites and for imaging an organ. In a preferable embodiment, X represents O; $R^1$ represents $C_{1-6}$alkyl; cyclo$_{3-12}$alkyl or (cyclo$C_{3-12}$alkyl)$C_{1-6}$alkyl, wherein one or more hydrogen atoms in a $C_{1-6}$alkyl-moiety or in a cyclo$C_{3-12}$alkyl-moiety optionally may be replaced by $C_{1-6}$alkyloxy, aryl, halo or thienyl; $R^2$ represents hydrogen; halo; $C_{1-6}$alkyl or amino; $R^3$ and $R^4$ each independently represent hydrogen or $C_{1-6}$alkyl; or $R^2$ and $R^3$ may be taken together to form -$R^2$-$R^3$-, which represents a bivalent radical of formula -$Z_4$-$CH_2$-$CH_2$-$CH_2$- or -$Z_4$-$CH_2$-$CH_2$- with $Z_4$ being O or $NR^{11}$ wherein $R^{11}$ is $C_{1-6}$alkyl; and wherein each bivalent radical is optionally substituted with $C_{1-6}$alkyl; or $R^3$ and $R^4$ may be taken together to form a bivalent radical of formula -$CH_2$-$CH_2$-$CH_2$-$CH_2$- ; $R^5$ represents hydrogen; Y represents O; and aryl represents phenyl optionally substituted with halo. Most preferred are radiolabelled compounds in which the radioactive isotope is selected from the group of of $^3$H, $^{11}$C and $^{18}$F. The invention also relates to their use in a diagnostic method, in perticular for marking and identifying a mGluR1 receptor in biological material, as well as to their use for imaging an organ, in particular using PET.

WO 03/082350 A2

— *of inventorship (Rule 4.17(iv)) for US only*

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