

(19) World Intellectual Property Organization
International Bureau



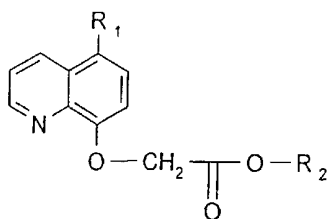
(43) International Publication Date
3 January 2002 (03.01.2002)

PCT

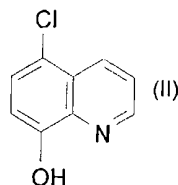
(10) International Publication Number
WO 02/000625 A3

- (51) International Patent Classification⁷: C07D 215/26
- (21) International Application Number: PCT/EP01/07258
- (22) International Filing Date: 26 June 2001 (26.06.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
1274/00 28 June 2000 (28.06.2000) CH
- (71) Applicant (for all designated States except US): SYNGENTA PARTICIPATIONS AG [CH/CH]; Schwarzwaldallee 215, CH-4058 Basel (CH).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): SCHEUZGER, Karl [CH/CH]; St. Gallerring 189, CH-4054 Basel (CH).
- (74) Agent: BASTIAN, Werner; c/o Syngenta Participations AG, Intellectual Property, P.O. Box, CH-4002 Basel (CH).
- (81) Designated States (national): 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- (88) Date of publication of the international search report:
18 July 2002
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

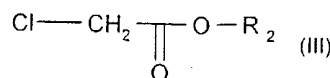
(54) Title: PROCESS FOR THE PREPARATION OF QUINOLINE DERIVATIVES



(I)



(II)



(III)

(57) Abstract: Compounds of formula (I), wherein R₁ is hydrogen or chlorine and R₂ is hydrogen, C₁-C₈alkyl, or C₁-C₈ alkyl substituted by C₁-C₆alkoxy or by C₃-C₆alkenyloxy, can be prepared by: a) introducing the major portion of the amount to be reacted of a compound of formula (II) into a solvent mixture comprising at least one organic solvent capable of forming an azeotrope with water, and at least one aprotic-dipolar solvent; b) metering in an aqueous strong base in an amount equivalent to that major portion of the total amount of the compound of formula (II); c) adding the remaining portion of the amount to be reacted of the compound of formula (II); d) adding a weak base in an amount that is at least equivalent to that remaining portion; e) removing the water from the reaction mixture by azeotropic distillation; f) adding a compound of formula (III), wherein R₂ is as defined for formula (I); and g) isolating the resulting compound of formula (I) from the reaction mixture.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/07258

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07D215/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, CHEM ABS Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | <p>UNGUREANU, MARGARETA ET AL: "Synthesis of new antibacterial and antifungal derivatives of 8-hydroxyquinoline" AN. STIINT. UNIV. "AL. I. CUZA" IASI, CHIM. (1999), 7(1), 55-60 , XP001053040 page 56 -page 57</p> <p align="center">---</p> | 1,2 |
| A | <p>EP 0 094 349 A (CIBA GEIGY AG) 16 November 1983 (1983-11-16) cited in the application page 34 -page 35; example 1</p> <p align="center">---</p> <p align="center">-/--</p> | 1,2 |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

25 January 2002

Date of mailing of the international search report

13/02/2002

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

De Jong, B

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/07258

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; WANG, YUZHOU ET AL: "Synthesis of aroxylacetic acids with di-catalyzing method" retrieved from STN Database accession no. 121:108123 XP002187694 abstract & HUAXUE SHIJIE (1993), 34(2), 62-4 , --- | 1,2 |
| A | DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; NGUYEN, VAN TONG ET AL: "Synthesis of some quinoline derivatives" retrieved from STN Database accession no. 125:195391 XP002187695 abstract & TAP CHI HOA HOC (1995), 33(4), 35-37 , ----- | 1,2 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 01/07258

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|-------------------------|------------------|
| EP 0094349 | A | 16-11-1983 | |
| | | AT 103902 T | 15-04-1994 |
| | | AU 575777 B2 | 11-08-1988 |
| | | AU 1432983 A | 10-11-1983 |
| | | BG 61093 B2 | 31-10-1996 |
| | | BR 8302394 A | 10-01-1984 |
| | | CA 1218994 A1 | 10-03-1987 |
| | | CS 245782 B2 | 16-10-1986 |
| | | DD 210832 A5 | 27-06-1984 |
| | | DE 3382743 D1 | 11-05-1994 |
| | | DK 204083 A | 08-11-1983 |
| | | EP 0094349 A2 | 16-11-1983 |
| | | ES 522141 D0 | 16-02-1985 |
| | | ES 8503212 A1 | 16-05-1985 |
| | | ES 536425 D0 | 01-06-1986 |
| | | ES 8607244 A1 | 01-11-1986 |
| | | GB 2120661 A , B | 07-12-1983 |
| | | GR 78348 A1 | 26-09-1984 |
| | | HU 190898 B | 28-12-1986 |
| | | IL 68588 A | 31-12-1986 |
| | | JP 2042826 C | 09-04-1996 |
| | | JP 7053642 B | 07-06-1995 |
| | | JP 60006603 A | 14-01-1985 |
| | | JP 1703469 C | 14-10-1992 |
| | | JP 3068862 B | 30-10-1991 |
| | | JP 58203967 A | 28-11-1983 |
| | | KE 3870 A | 16-06-1989 |
| | | LT 2617 R3 | 25-03-1994 |
| | | LV 5154 A3 | 10-10-1993 |
| | | MX 154628 A | 05-11-1987 |
| | | MY 85987 A | 31-12-1987 |
| | | NZ 204151 A | 10-09-1986 |
| | | PL 241841 A1 | 26-03-1985 |
| | | RO 85265 A1 | 29-09-1984 |
| | | SU 1658807 A3 | 23-06-1991 |
| | | US 5023333 A | 11-06-1991 |
| | | US 5102445 A | 07-04-1992 |
| | | US 4902340 A | 20-02-1990 |
| | | ZA 8303238 A | 29-02-1984 |