

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
25 April 2002 (25.04.2002)

PCT

(10) International Publication Number
WO 02/32900 A2

(51) International Patent Classification⁷: **C07D 471/04**,
A61K 31/4178, 31/437, A61P 29/00, C07D 235/08,
491/04, 473/00, 521/00, 401/06, 401/04, 417/12, 403/12,
401/12, 235/30, 417/04, 403/04, 403/06 // (C07D 471/04,
235:00, 221:00) (C07D 491/04, 317:00, 235:00) (C07D
491/04, 319:00, 235:00)

(21) International Application Number: PCT/IB01/01940

(22) International Filing Date: 15 October 2001 (15.10.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/241,825 19 October 2000 (19.10.2000) US

(71) Applicant (for JP only): **PFIZER PHARMACEUTI-
CALS INC.** [JP/JP]; Mitsui Building, 1-1, Nishi-shinjuku
2-chome, Shinjuku-ku, Tokyo 163-0461 (JP).

(71) Applicant (for all designated States except JP, US):
PFIZER INC. [US/US]; 201 Tabor Road, Morris Plain,
NJ 07950 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NAKAO, Kazunari**
[JP/JP]; Pfizer Global Research & Development, 2, Aza
5-gochi, Taketoyo-cho, Chita-gun, Aichi-ken 470-2393
(JP). **OKUMURA, Yoshiyuki** [JP/JP]; Pfizer Global
Research & Development, 2, Aza 5-gochi, Taketoyo-cho,
Chita-gun, Aichi-ken 470-2393 (JP). **MATSUMIZU,
Miyako** [JP/JP]; Pfizer Global Research & Development,
2, Aza 5-gochi, Taketoyo-cho, Chita-gun, Aichi-ken
470-2393 (JP). **UNEO, Naomi** [JP/JP]; Pfizer Global
Research & Development, 2, Aza 5-gochi, Taketoyo-cho,
Chita-gun, Aichi-ken 470-2393 (JP). **HASHIZUME,
Yoshinobu** [JP/JP]; Pfizer Global Research & Develop-
ment, 2, Aza 5-gochi, Taketoyo-cho, Chita-gun, Aichi-ken
470-2393 (JP). **KATO, Tomoki** [JP/JP]; Pfizer Global

Research & Development, 2, Aza 5-gochi, Taketoyo-cho,
Chita-gun, Aichi-ken 470-2393 (JP). **KAWAI, Akiyoshi**
[JP/JP]; Pfizer Global Research & Development, 2, Aza
5-gochi, Taketoyo-cho, Chita-gun, Aichi-ken 470-2393
(JP). **MIYAKE, Yoriko** [JP/JP]; Pfizer Global Research &
Development, 2, Aza 5-gochi, Taketoyo-cho, Chita-gun,
Aichi-ken 470-2393 (JP). **NUKUI, Seiji** [JP/JP]; Pfizer
Global Research & Development, 2, Aza 5-gochi, Take-
toyo-cho, Chita-gun, Aichi-ken 470-2393 (JP). **SHINJO,
Katsuhiko** [JP/JP]; Pfizer Global Research & Develop-
ment, 2, Aza 5-gochi, Taketoyo-cho, Chita-gun, Aichi-ken
470-2393 (JP). **TANIGUCHI, Kana** [JP/JP]; Pfizer Global
Research & Development, 2, Aza 5-gochi, Taketoyo-cho,
Chita-gun, Aichi-ken 470-2393 (JP).

(74) Agents: **LUMB, Trevor, J.** et al.; 201 Tabor Road, Morris
Plains, NJ 07950 (US).

(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, PH, 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, GQ, GW, ML, MR, NE, SN, TD,
TG).

Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: ARYL OR HETEROARYL FUSED IMIDAZOLE COMPOUNDS AS ANTI-INFLAMMATORY AND ANALGESIC AGENTS

(57) Abstract: This invention provides a compound of the formula (I): or the pharmaceutically acceptable salts thereof, wherein Y¹, Y², Y³, and Y⁴ are independently selected from N, CH, etc.; R¹ is H, C₁₋₈ alkyl, etc.; Q¹ is a 5-12 membered monocyclic or bicyclic aromatic ring optionally containing up to 4 heteroatoms selected from O, N and S, etc.; A is a 5-6 membered monocyclic aromatic ring optionally containing up to 3 heteroatoms selected from O, N and S, etc.; B is C₁₋₆ alkylene optionally substituted with an oxo group, etc.; W is NH, O, etc.; R² is H, C₁₋₄ alkyl, etc.; Z is a 5-12 membered monocyclic or bicyclic aromatic ring optionally containing up to 3 heteroatoms selected from O, N and S, etc.; L is halo, C₁₋₄ alkyl, etc.; m is 0, 1 or 2; R³ and R⁴ are independently selected from H and C₁₋₄ alkyl; R⁵ is H, C₁₋₄ alkyl, etc.; Q² is a 5-12 membered monocyclic or bicyclic aromatic ring or tricyclic ring optionally containing up to 3 heteroatoms selected from O, N and S, etc. These compounds are useful for the treatment of medical conditions mediated by prostaglandin such as pain, fever or inflammation, etc. This invention also provides a pharmaceutical composition comprising the above compound.



WO 02/32900 A2