(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 April 2006 (06.04.2006)

PCT

(10) International Publication Number
WO 2006/035954 A1

(51) International Patent Classification:

C07D 417/06 (2006.01)	*A61P 1/02* (2006.01)
A61K 31/4709 (2006.01)	*A61P 1/04* (2006.01)
A61K 31/4725 (2006.01)	*A61P 11/00* (2006.01)
A61K 31/473 (2006.01)	*A61P 11/06* (2006.01)
A61K 31/496 (2006.01)	*A61P 17/02* (2006.01)
A61K 31/497 (2006.01)	*A61P 17/16* (2006.01)
A61K 31/5377 (2006.01)	*A61P 27/02* (2006.01)
A61K 31/541 (2006.01)	*A61P 35/00* (2006.01)
A61K 31/55 (2006.01)	*C07D 417/04* (2006.01)
A61P 1/00 (2006.01)	*C07D 417/14* (2006.01)

(21) International Application Number:
PCT/JP2005/018217

(22) International Filing Date:
26 September 2005 (26.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004-282814 28 September 2004 (28.09.2004) JP

(71) Applicant *(for all designated States except US)*: **OTSUKA PHARMACEUTICAL CO., LTD.** [JP/JP]; 9, Kandatsukasa-cho 2-chome, Chiyoda-ku, Tokyo, 1018535 (JP).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **KURODA, Takeshi** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **YAMAUCHI, Takahito** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **SHINOHARA, Tomoichi** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **OSHIMA, Kunio** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **KITAJIMA, Chiharu** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **NAGAO, Hitoshi** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **FUKUSHIMA, Tae** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **TOMOYASU, Takahiro** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **ISHIYAMA, Hironobu** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **OHTA, Kazuhide** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **TAKANO, Masaaki** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP). **SUMIDA, Takumi** [JP/JP]; c/o OTSUKA PHARMACEUTICAL CO., LTD., 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima, 7710192 (JP).

(74) Agents: **SAEGUSA, Eiji** et al.; Kitahama TNK Building, 1-7-1, Doshomachi, Chuo-ku, Osaka-shi, Osaka, 5410045 (JP).

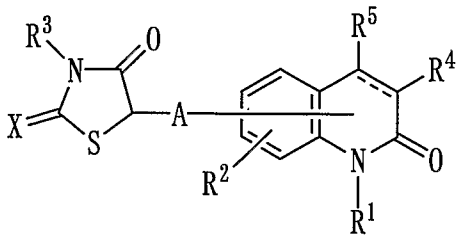
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK,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

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH,

[Continued on next page]

WO 2006/035954 A1

(54) Title: CARBOSTYRIL COMPOUND



(1)

(57) Abstract: The present invention provides a carbostyril compound represented by General Formula (1) or a salt thereof, wherein A is a direct bond, a lower alkylene group, or a lower alkylidene group; X is an oxygen atom or a sulfur atom; R^4 and R^5 each represent a hydrogen atom; the bond between the 3 and 4 positions of the carbostyril skeleton is a single bond or a double bond; R^1 is a hydrogen atom, etc; R^2 is a hydrogen atom, etc; and R^3 is a hydrogen atom, etc. The carbostyril compound or salt thereof of the present invention induces the production of TFF, and thus is usable for the treatment and/or prevention of disorders such as alimentary tract diseases, oral diseases, upper respiratory tract diseases, respiratory tract diseases, eye diseases, cancers, and wounds.

GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

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.