14/08/02

20020048825

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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 August 2001 (23.08.2001)

PCT

(10) International Publication Number
WO 01/60993 A1

(51) International Patent Classification[7]: C12N 9/90, 15/00

(21) International Application Number: PCT/SG00/00023

(22) International Filing Date: 15 February 2000 (15.02.2000)

(25) Filing Language: English

(26) Publication Language: English

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(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, 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), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, 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.

ACTION

162162

WO 01/60993 A1

(54) Title: BACTERIAL ISOLATES OF THE GENUS KLEBSIELLA, AND AN ISOMALTULOSE SYNTHASE GENE ISOLATED THEREFROM

(57) Abstract: Two strains of a novel bacterial species, *Klebsiella singaporensis* LX3 and LX21, are claimed. A nucleotide sequence (*kis*) encoding a novel form of isomaltulose synthase, KIS, is also claimed. Also claimed is a method for production of isomaltulose in a plant, which method comprises introducing into a cell of such plant a nucleic acid sequence which encodes an enzyme which converts sucrose into isomaltulose in a manner which allows said cell to express said nucleic acid sequence, as well as a functional cloning method of isolating nucleotide sequence encoding the KIS protein comprising the steps of (a) preparing a gene bank from a donor organism that contains a DNA sequence coding for an isomaltulose biosynthesis activity in a suitable host organism, (b) screening the clones of interest from the gene bank by their enhanced reducing sugar content, and (c) isolating the clones which contain a DNA coding for a protein with isomaltulose biosynthesis activity.