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(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.