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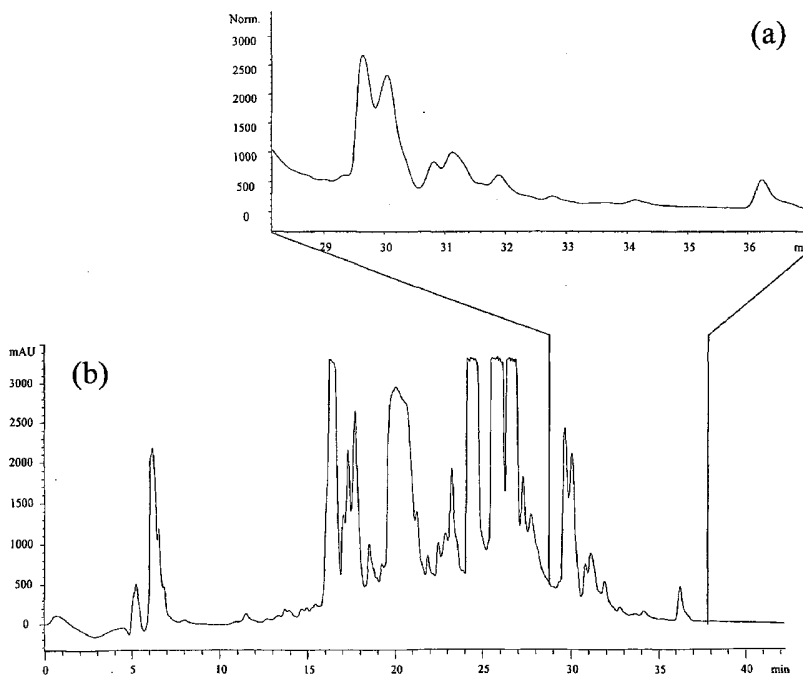
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(54) Title: NUCLEIC ACID MOLECULES ENCODING PLANT CYCLOTIDE POLYPEPTIDES AND METHODS OF USE



(57) Abstract: The present invention relates to isolated nucleic acids encoding plant cyclotides. The invention also relates to the construction of a chimeric gene encoding all or a portion of the plant cyclotides, in sense or antisense orientation, wherein expression of the chimeric gene results in the production of altered levels of plant cyclotides in a transformed host cell.

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<p>A. CLASSIFICATION OF SUBJECT MATTER C07K14/415 C07K7/64 A61K38/16 C07K14/00</p>		
<p>According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p>B. FIELDS SEARCHED</p>		
<p>Minimum documentation searched (classification system followed by classification symbols) C07K</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, Sequence Search, BIOSIS, CHEM ABS Data</p>		
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>WO 01/27147 A (THE UNIVERSITY OF QUEENSLAND; CRAIK, DAVID, JAMES; DALY, NORELLE, LEE;) 19 April 2001 (2001-04-19) Many cyclic cystine knot cycloviolacin peptides show high level of identity (between 75-96%) with SEQ ID N°2, 4 and 7 over up to 29 aa. Circulin A peptide shows 100% identity with ID N°6 over 13 aa the whole document</p>	1-23
Y	<p>WO 00/68265 A (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA; SELSTED, MICHAEL, E; TANG) 16 November 2000 (2000-11-16) Sequence 10 (the same as in patent US 6890537) shows 95.83% identity with SEQ ID N°2 and 4 over 23 residues (81-104:7-30) the whole document</p>	1-23
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<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>		
<p>* Special categories of cited documents :</p> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p> <p>*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</p> <p>*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</p> <p>*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.</p> <p>*&* document member of the same patent family</p>		
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>GUSTAFSON K R ET AL: "New circulin macrocyclic polypeptides from Chassalia parvifolia." JOURNAL OF NATURAL PRODUCTS. FEB 2000, vol. 63, no. 2, February 2000 (2000-02), pages 176-178, XP002362045 ISSN: 0163-3864 In particular see table 1 circulin F the whole document</p>	1-4, 12-17
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Y	<p>TAM J P ET AL: "AN UNUSUAL STRUCTURAL MOTIF OF ANTIMICROBIAL PEPTIDES CONTAINING END-TO-END MACROCYCLE AND CYSTINE-KNOT DISULFIDES" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, DC, US, vol. 96, August 1999 (1999-08), pages 8913-8918, XP002955358 ISSN: 0027-8424 in particular see Fig. 1 , table 1-2, and page 1918 the whole document</p>	1-23

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>JENNINGS C ET AL: "Biosynthesis and insecticidal properties of plant cyclotides: The cyclic knotted proteins from Oldenlandia affinis" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, DC, US, vol. 98, no. 19, 11 September 2001 (2001-09-11), pages 10614-10619, XP002296806 ISSN: 0027-8424 cited in the application the whole document</p>	1-23
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P,X	<p>DUTTON JULIE L ET AL: "Conserved structural and sequence elements implicated in the processing of gene-encoded circular proteins." THE JOURNAL OF BIOLOGICAL CHEMISTRY. 5 NOV 2004, vol. 279, no. 45, 5 November 2004 (2004-11-05), pages 46858-46867, XP002361631 ISSN: 0021-9258 in particular cyclotide c2, the sequence disclosed shows 100% identity with SEQ ID N°2 over 115 residues overlap the whole document</p>	1-23

INTERNATIONAL SEARCH REPORT

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