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KG, KM, KN, 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,
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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: HYBRID ENZYMES CONSISTING OF AN ENDO-AMYLASE FIRST AMINO ACID SEQUENCE AND A CAR-
BOHYDRATE -BINDING MODULE AS SECOND AMINO ACID SEQUENCE

(57) Abstract: The present invention relates, inter alia, to hybrid enzymes comprising a carbohydrate binding module and having
endo- amylase activity. The enzymes may be applied in processes comprising starch modification and/or degradation, or in dough
making processes.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K19/00 C12N9/28 C12N15/56 A21D8/04
ADD. C12N5/10 C12N1/14 C12N1/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C07K C12N A21D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, Sequence Search, PAJ, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/16633 A (NOVO NORDISK A/S; BJOERNVAD, MADS; PEDERSEN, SVEN; SCHULEIN, MARTIN; B) 23 April 1998 (1998-04-23) abstract; claims 1-23 -----	1,2,4, 13,14, 21-52
X	LIN L-L ET AL: "alpha-amylase (EC 3.2.2.1)" SWALL, 1 November 1996 (1996-11-01), XP002255839 the whole document -----	4,5
A	WO 01/88107 A (NOVOZYMES A/S) 22 November 2001 (2001-11-22) the whole document ----- -/--	1-52

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"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
"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
"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
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INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2005/000819

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/068976 A (NOVOZYMES A/S; NORMAN, BARRIE, EDMUND; VIKSOE-NIELSEN, ANDERS; OLSEN,) 21 August 2003 (2003-08-21) the whole document -----	1-52
P,X	WO 2004/113551 A (NOVOZYMES A/S; VIKSOE-NIELSEN, ANDERS; ANDERSEN, CARSTEN; PEDERSEN, SV) 29 December 2004 (2004-12-29) page 6, paragraph 7 - page 7, paragraph 2; sequences 1 AND 13-19 -----	1-52
P,X	WO 2005/003311 A (NOVOZYMES A/S; NOVOZYMES NORTH AMERICA, INC; TAIRA, RIKAKO; TKAGI, SHI) 13 January 2005 (2005-01-13) the whole document -----	1,3,13, 14,21-52
T	MACHOVIC MARTIN ET AL: "A new clan of CBM families based on bioinformatics of starch-binding domains from families CBM20 and CBM21" FEBS JOURNAL, vol. 272, no. 21, November 2005 (2005-11), pages 5497-5513, XP002374813 ISSN: 1742-464X(print) 1742-4658(ele) -----	1-52

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/DK2005/000819

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9816633	A	23-04-1998	AU 4551097 A CN 1233286 A EP 0950093 A2	11-05-1998 27-10-1999 20-10-1999
WO 0188107	A	22-11-2001	AU 5822901 A	26-11-2001
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WO 2005003311	A	13-01-2005	EP 1648996 A2 MX PA06000212 A	26-04-2006 21-03-2006

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK2005/000819

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-52 (all partial)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-52 (all partial)

Hybrid polypeptides having a first polypeptide having endo-amylase activity and a second sequence having at least 60% identity with amino acid 485 to 586 of Seq ID No 2 (a carbohydrate-binding module). Processes for preparing dough or an edible product, using said polypeptide. Compositions comprising said polypeptides. Dough or bread-improving additive in the form of a granulate powder comprising said polypeptide. Processes for designing said polypeptides. Process for preparing compositions suitable as bread improving additive comprising said polypeptides. Processes for preparing dough or edible product comprising said polypeptides. Processes for saccharifying starch using said polypeptides, and said processes leading to ethanol production. DNA sequences encoding said polypeptides, DNA constructs comprising said DNA sequence, vectors comprising said construct. Host cells transformed with said vectors.

2. claims: 1-52 (all partial)

All hybrid polypeptides having a first polypeptide having endo-amylase activity and being at least 60% identical with the amino acid having Seq ID No 35. Processes for preparing dough or an edible product, using said polypeptide. Compositions comprising said polypeptides. Dough or bread-improving additive in the form of a granulate powder comprising said polypeptide. Processes for designing said polypeptides. Process for preparing compositions suitable as bread improving additive comprising said polypeptides. Processes for preparing dough or edible product comprising said polypeptides. Processes for saccharifying starch using said polypeptides, and said processes leading to ethanol production. DNA sequences encoding said polypeptides, DNA constructs comprising said DNA sequence, vectors comprising said construct. Host cells transformed with said vectors.

Inventions 4-9, claims 1-52 (all partial)

As for subject 3, now for respectively Seq ID NO 36, 37, 38, 39, 40, 41, and 42.
