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- (71) **Applicant** (for all designated States except US): **DUPONT NUTRITION BIOSCIENCES APS** [—/DK];
Langebrogade 1, P.O. Box 17, DK-1001 Copenhagen K (DK).
- (72) **Inventor; and**
- (75) **Inventor/Applicant** (for US only): **ISAKSEN, Mai Faurschou** [DK/DK]; Grumstolsvej 17 A, DK-8270 Højbjerg (DK).
- (74) **Agent:** **BLANCE, Stephen;** D Young & Co LLP, 120 Holborn, London EC1N 2DY (GB).
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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.1 7(in))
- of inventorship (Rule 4.1 7(iv))

Published:

- with international search report (Art. 21(3))
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- (88) **Date of publication of the international search report:**
1 November 2012

(54) **Title:** METHOD FOR IDENTIFYING A PEPSIN RESISTANT ALPHA AMYLASE

(57) **Abstract:** The present invention relates to a method for identifying a pepsin resistant alpha amylase enzyme for use in a feed supplement comprising: i) providing an alpha amylase enzyme; ii) admixing said alpha amylase with corn based feed and buffer solution comprising a pepsin concentration of 9000 U/ml at pH 3, 40°C, 500 rpm for at least 120 minutes and analysing alpha amylase activity on said alpha amylase compared to a control sample; wherein said control sample differs in that no pepsin is present during incubation; and iii) selecting an alpha amylase enzyme which substantially maintains alpha amylase activity under the assay conditions; feed supplements and feedstuffs comprising a pepsin resistant alpha amylase and the use of pepsin resistant alpha amylases in feed.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. C12Q1/40 C12Q1/00 ADD.		
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) C12Q		
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 practicable, search terms used) EPO-Internal , BIOSIS, COMPENDEX, EMBASE, INSPEC, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	wo 98/26078 AI (GENENCOR INT [US]) 18 June 1998 (1998-06-18)	13 , 15-17 , 22-32 , 65,66
Y	figure 4; sequence 34 ----- -/--	1-12 , 14, 21, 33-40, 45-64, 67-70
☒ 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 application or patent but published on or after the international filing date "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) "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 "&" document member of the same patent family		
Date of the actual completion of the international search 27 March 2012		Date of mailing of the international search report 14/08/2012
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Stachowi ak, Ol af

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2011/053018

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	wo 2008/153805 A2 (DANISCO US INC GENENCOR DIV [US] ; AEHLE WOLFGANG [US] ; AMIN NEELAM S []) 18 December 2008 (2008-12-18)	13 , 15-17 , 22-32 , 65,66
Y	sequence 16	1-12 , 14, 21 , 33-40, 45-64, 67-70
Y	----- US 5 372 811 A (YODER RALPH P [US]) 13 December 1994 (1994-12-13) the whol e document	1-17 , 21-40, 45-70
Y	----- JP 7 143880 A (TAKARA SHUZO CO) 6 June 1995 (1995-06-06) the whol e document	1-17 , 21-40, 45-70
A	----- HRISTOV A N ET AL: "EFFECT OF DIETARY OR ABOMASAL SUPPLEMENTATION OF EXOGENOUS POLYSACCHARIDE-DEGRADING ENZYMES ON RUMEN FERMENTATION AND NUTRI ENT DIGESTIBI LITY" , JOURNAL OF ANIMAL SCI ENCE, AMERICAN SOCI ETY OF ANIMAL SCI ENCE, US, vol . 76, no. 12 , 1 January 1998 (1998-01-01) , pages 3146-3156, XP000992906, ISSN: 0021-8812 the whol e document -----	1-17 , 21-40, 45-70

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2011/053018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2011/053018

Box No. 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 No. 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 fees, this Authority did not invite payment of additional fees.

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. :

1-17 , 21-40, 45-70(al l parti al ly)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ 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: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to SEQ ID NO:1 (protei n) and SEQ ID NO:2 (polynucl eoti de) .

2. claims: 18-20, 41-44(compl etely) ; 1-17, 21-40, 45-70(parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to SEQ ID NO:3 (protei n) and SEQ ID NO:4 (polynucl eoti de) .

3. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO: 7.

4. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO:8.

5. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO:9 .

6. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO: 10.

7. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO: 11 .

8. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO: 12 .

9. claims: 1-17, 21-40, 45-70(al l parti al ly)

Feed supplements and methods for thei r preparati on rel ated
to a pepsi n resi stant al pha amylase compri si ng SEQ ID NO: 13 .

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210
