Abstract:
The present invention relates to a novel mutant *Aspergillus aculeatus* E14-292 and a genetic modification process of said strain, wherein the mutant strain according to this invention can produce cellulase and xylanase more than the BCC199 (wild type). Moreover, the obtained enzymes can be used to digest the pretreatment bagasse to further produce sugars effectively.

Figure 2
Building A, 14th - 18th Floor, Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900 (TH).

(74) Agent: CHANGCHUMNI, Manoon et al; Rouse & Co. International (Thailand) Limited, Unit 1401-3 and 1408, Floor 14, Two Pacific Place, 142 Sukhumvit Road, Klongtoey, Bangkok 10110 (TH).


Declarations under Rule 4.17:
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(I))
— of inventorship (Rule 4.17(iv))

Published:
— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
07 March 2019 (07.03.2019)
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC - C12N 9/00, 9/10, 9/20, 9/24, 15/80; C12P 21/02 (2019.01)
CPC - C12N 9/00, 9/10, 9/20, 9/88, 9/248, 9/1085, 9/2482, 15/80; C12P 21/02; C12R 1/69; C12Y 302/01 008

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)
See Search History document

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

Electronic database consulted during the international search (name of database and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 2005/0153397 A1 (CHRISTENSEN et al.) 14 July 2005; abstract; paragraphs [0056], [0064], (0157)</td>
<td>1-3, 4/2-3, 8-18, 19/8-18, 20/19/8-18</td>
</tr>
<tr>
<td>A</td>
<td>US 6,080,567 A (KOFOD et al.) 27 June 2000; abstract; claims 1, 6</td>
<td>1-3, 4/2-3, 8-11,19/8-11, 1, 20/19/8-11 1</td>
</tr>
<tr>
<td>A</td>
<td>CN 101942395 A (YUNNAN INST OF MICROBIOLOGY) 12 January 2011; abstract</td>
<td>1-3, 4/2-3, 8-11,19/8-11, 1, 20/19/8-11 1</td>
</tr>
<tr>
<td>A</td>
<td>US 6,200,797 B1 (DUNLOP et al.) 13 March 2001; abstract; column 5, lines 58-65</td>
<td>12-18, 19/12-18, 20/19/12-18</td>
</tr>
<tr>
<td>A</td>
<td>US 3,734,831 A (HULME) 22 May 1973; claim 1</td>
<td>12-18, 19/12-18, 20/19/12-18</td>
</tr>
</tbody>
</table>

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: 10 January 2019 (10.01.2019)

Date of mailing of the international search report: 29 JAN 2019

Name and mailing address of the ISA/
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Authorized officer: Shane Thomas
PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2019)
INTERNATIONAL SEARCH REPORT

International application No.
PCT/TH 18/00029

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.: 6 7, 21 22
   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:

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 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.:

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2015)