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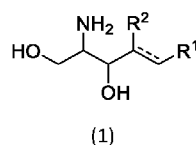
Published:

- 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))
- with sequence listing part of description (Rule 5.2(a))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

(88) Date of publication of the international search report:

27 February 2025 (27.02.2025)

(54) Title: FERMENTATION MATERIAL



(57) Abstract: The present invention relates to a spray dried fermentation material comprising at least 8 wt.% acetylated derivative of a sphingoid base of formula (1), wherein R^1 is C_{11} - C_{24} alkyl, which may be saturated or contain one or more double and/or triple bonds, and/or which may contain one or more functional groups, the functional group being preferably selected from the group consisting of a hydroxyl group, R^2 is hydrogen or -OH, the bond may be a double or a single bond when R^2 is hydrogen, or is a single bond when R^2 is -OH, and wherein said acetylated derivative of the sphingoid base comprises a mixture of tri- and di- acetylated derivatives of said sphingoid base in a ratio from about 1:0.2 to about 0.2:1, correspondingly. The invention discloses a method of producing the spray dried fermentation material and cells that are capable of fermenting the acetylated derivatives of the sphingoid base.



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/055825

A. CLASSIFICATION OF SUBJECT MATTER

INV. C12P13/00 C12P13/02 C12N1/16
ADD. C12R1/84

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)

C12P C12N C12R

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, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	BÖRGEL D. ET AL: "Metabolic engineering of the non-conventional yeast <i>Pichia ciferrii</i> for production of rare sphingoid bases", METABOLIC ENGINEERING, vol. 14, no. 4, 1 July 2012 (2012-07-01), pages 412-426, XP055037974, ISSN: 1096-7176, DOI: 10.1016/j.ymben.2012.03.003	14
A	abstract; pages 419-420, paragraph 3.2	1-13, 15-17
X	WO 2022/158993 A1 (CARBOCODE S A [PT]) 28 July 2022 (2022-07-28)	1-12, 15-17
Y	claims 45-46; examples 13, 14	13,14
	----- -/-	

☒ 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

31 October 2024

Date of mailing of the international search report

27/01/2025

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/055825

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 2017/033463 A1 (AJINOMOTO KK [JP]; EVOLVA SA [CH]) 2 March 2017 (2017-03-02) claims 1, 5 -----	1-17
Y	WO 2006/048458 A2 (COSMOFERM BV [NL]; VAN DEN BERG MARCO ALEXANDER [NL] ET AL.) 11 May 2006 (2006-05-11) page 13, line 7 - line 11; example 9 -----	13
A	TER VELD F.: "Production of tetraacetyl phytosphingosine (TAPS) in Wickerhamomyces ciferrii is catalyzed by acetyltransferases Sli1p and Atf2p", APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, vol. 97, no. 19, 15 January 2013 (2013-01-15), pages 8537-8546, XP093163710, Berlin/Heidelberg ISSN: 0175-7598, DOI: 10.1007/s00253-012-4670-3 the whole document -----	1-17
A	SCHORSCH C. ET AL: "Biotechnological production of sphingoid bases and their applications", APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, SPRINGER BERLIN HEIDELBERG, BERLIN/HEIDELBERG, vol. 97, no. 10, 12 April 2013 (2013-04-12), pages 4301-4308, XP035328938, ISSN: 0175-7598, DOI: 10.1007/s00253-013-4878-X [retrieved on 2013-04-12] pages 4304-4306 -----	1-17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2024/055825

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing:
 - a. ☒ forming part of the international application as filed.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)).

☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
2. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this report has been established to the extent that a meaningful search could be carried out without a WIPO Standard ST.26 compliant sequence listing.
3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2024/055825

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

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

Spray dried fermentation material comprising at least 8 wt % of acetylated derivatives of a sphingoid base of formula (1); method of producing said spray dried fermentation material.

2. claims: 18-22

Recombinant *Wickerhamomyces ciferrii* cell.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2024/055825

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2022158993 A1	28-07-2022	EP 4281435 A1	29-11-2023
		US 2024132440 A1	25-04-2024
		WO 2022158993 A1	28-07-2022

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		CN 108779480 A	09-11-2018
		EP 3341488 A1	04-07-2018
		JP 6869960 B2	12-05-2021
		JP 2018525017 A	06-09-2018
		US 2018179563 A1	28-06-2018
		WO 2017033463 A1	02-03-2017

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		JP 2008518612 A	05-06-2008
		KR 20070091134 A	07-09-2007
		US 2008299625 A1	04-12-2008
		WO 2006048458 A2	11-05-2006
