

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 82943-WO-REG-ORG-P-1	FOR FURTHER ACTION See item 4 below	
International application No. PCT/EP2024/059884	International filing date (<i>day/month/year</i>) 11 April 2024 (11.04.2024)	Priority date (<i>day/month/year</i>) 13 April 2023 (13.04.2023)
International Patent Classification (IPC) or national classification and IPC See relevant information in Form PCT/ISA/237		
Applicant SYNGENTA CROP PROTECTION AG		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 8 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☒	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
☒	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application
4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

	Date of issuance of this report 08 October 2025 (08.10.2025)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Agnès Wittmann-Regis e-mail pct.team6@wipo.int

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2024/059884

International filing date (day/month/year)
11.04.2024

Priority date (day/month/year)
13.04.2023

International Patent Classification (IPC) or both national classification and IPC
INV. C07D487/04 A01N43/90 A01P3/00

Applicant
SYNGENTA CROP PROTECTION AG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0

Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Koch, Kristian

Telephone No. -0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established 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.
4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.
5. Additional comments:

Box No. II Priority

1. ☐ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

see separate sheet

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-16</u>
	No: Claims	<u>17</u>
Inventive step (IS)	Yes: Claims	<u>1-16</u>
	No: Claims	<u>17</u>
Industrial applicability (IA)	Yes: Claims	<u>1-17</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Re Item II

1. The ISA has in its possession a copy of the priority application. The priority claim to present claims 1-17 appears to be valid.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2. Reference is made to the following documents:

- D1 EP 1 431 299 A1 (SUMITOMO CHEMICAL CO [JP]) 23 June 2004
(2004-06-23)
- D2 WO 2014/078813 A1 (IRM LLC [US]; NOVARTIS AG [CH] ET AL.) 22 May
2014 (2014-05-22)
- D3 DATABASE REGISTRY [Online]
Chemical Abstract Service, Columbus, Ohio, US; 25 April 2019
(2019-04-25),
XP093177239,
Database accession no. 2305449-72-1
- D4 DATABASE REGISTRY [Online]
Chemical Abstract Service, Columbus, Ohio, US; 3 January 2020
(2020-01-03),
XP093177245,
Database accession no. 2398966-16-8
- D5 DATABASE REGISTRY [Online]
Chemical Abstract Service, Columbus, Ohio, US; 13 December 2023
(2023-12-13),
XP093177252,
Database accession no. 3016602-76-6
- D6 BECKERS IGOR ET AL: "Dual ligand approach increases functional group
tolerance in the Pd-catalysed C-H arylation of N -heterocyclic
pharmaceuticals",
CHEMICAL SCIENCE,
vol. 14, no. 5, 1 February 2023 (2023-02-01), pages 1176-1183,

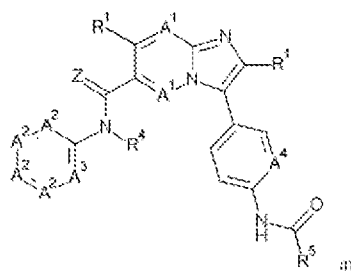
XP093177265,
United Kingdom
ISSN: 2041-6520, DOI: 10.1039/D2SC04911B
Retrieved from the Internet:
URL: <https://pubs.rsc.org/en/content/articlepdf/2023/sc/d2sc04911b>

D7 DATABASE REGISTRY [Online]
Chemical Abstract Service, Columbus, Ohio, US; 18 December 2022
(2022-12-18),
XP093177281,
Database accession no. 2870811-83-7

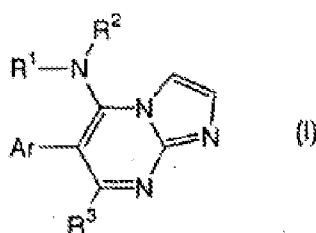
D8 DATABASE REGISTRY [Online]
Chemical Abstract Service, Columbus, Ohio, US; 6 April 2023
(2023-04-06),
XP093177283,
Database accession no. 2919437-74-2

3. Novelty

Independent claim 1 is directed to a compound of formula (I) and their fungicidal activity for controlling infestation of plants, harvested food crops, seeds or non-living materials by phytopathogenic microorganisms.

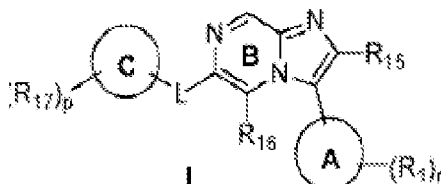


D1 discloses compounds of formula (I) with a core imidazo[1,2-a]pyrimidine structure and their use as fungicides.



The compounds of D1 differ from those of present formula (I) on account of the substituents attached to the fused hetero-ring system.

D2 discloses compounds of formula I and their activity as in the treatment or prevention of malaria.



The compounds of D2 differ from those of present formula (I) mainly on account of the fused hetero-ring system, i.e. present imidazo[1,2-a]pyridazine/pyrimidine or imidazo[1,2-b]triazin versus imidazo[1,2-a]pyrazine.

Independent claims 16 and 17 is directed to compounds of formula (XXX), formula (XI) and formula (II) which are intermediates for the preparation of compounds of formula (I).

D1 and D2 do not discloses compounds of present formula (XXX), formula (XI) and formula (II).

D3, D4, D5, D6, D7, and D8 disclose specific compounds which lie inside the scope of formula (XI) of claim 17.

Thus, the subject-matter of claim 17 is not novel and fails to fulfil the requirements of Article 33(2) PCT.

4. Inventive step

4.1 D1 can be selected as the closest prior art, since D1 discloses imidazo[1,2-a]pyrimidine compounds which have activity against fungi.

The present compounds of formula (I) do not have any shown improved effect over the compounds of D1.

Thus, the objective technical problem is the provision of alternative compounds having activity against phytopathogenic fungi.

The description comprises specific compounds 1-10 of which selected compounds have been tested in three assays. These compounds appears to have the wanted activity. The claims appear to represent a reasonable generalisation of the tested compounds.

The skilled person starting from D1 does not have any incentive to modify the substituents of imidazo[1,2-a]pyrimidine by modifying the Ar group to an amide, remove the -NR¹R² group and add a substituent to the imidazole ring. D2 discloses compounds having anti-malarial activity and not activity against phytopathogenic fungi. The skilled person would therefore not have any particular incentive to modify the imidazo[1,2-a]pyridine core structure of D1 with the substituents suggested in D2.

The intermediates of formula (XXX) contribute with non-obvious structural parts to the active compounds of present formula (I) vis-à-vis D1 and D2.

Thus, the subject-matter of claims 1-16 appears to involve an inventive step and fulfils the requirements of Article 33(3) PCT.

4.2 Since claims 17 is not new, said claim cannot be considered to be inventive (cf. Article 33(3) PCT).

Re Item VI

Certain documents cited

5. Reference is made to the following document:

D9 WO 2023/061838 A1 (SYNGENTA CROP PROTECTION AG [CH]) 20 April 2023 (2023-04-20)

It has been published after the priority date of the current application and therefore not taken into consideration for the PCT opinion under Item V, but may be of relevance at the national phase. D9 discloses compounds of formula (I) and their fungicidal activity for controlling infestation of plants, harvested food crops, seeds or non-living materials by phytopathogenic microorganisms. The compounds of D9 differ from the present compounds due to the fused hetero-ring system in the core structure.