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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: SPHINGOSINE DERIVATIVE AS AN IMMUNOREGULATOR COMPOUND

(57) Abstract: The invention relates to sphingosine derivative compounds, like D-erythro-sphingosine 1-phosphate (S1P), to be used as immunomodulators in a microbicidal treatment of infections derived from bacteria and specifically *Mycobacterium tuberculosis*. Such compounds are characterized in that they stimulate macrophagic Phospholipase D (PLD) (Figure 1). The invention further relates to pharmaceutical compositions containing sphingosine derivative compounds and diagnostic methods for the preparation thereof. Further objects of the invention are methods of inducing or restoring the microbicidal activity *in vitro* of macrophages for monitoring the efficiency of phagocytosis and degradation processes performed by the same and assay methods suitable to evaluate therapeutic effectiveness of candidate microbicides.



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**INTERNATIONAL SEARCH REPORT**

International Application No

PCT/IT 02/00740

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 A61K31/045 A61K31/13

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)  
 IPC 7 A61K

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)  
 WPI Data, PAJ, EPO-Internal, CHEM ABS Data, EMBASE, MEDLINE, BIOSIS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 147 118 A (STREEKSTRA HUGO ET AL) 14 November 2000 (2000-11-14) claims 1,3,6; example 1 ---	1-25
X	DE 198 10 999 A (SCHAEFER KORTING MONIKA ;DERMAPHARM GMBH (DE); KLEUSER BURKHARD (D) 16 September 1999 (1999-09-16) claims 1,2,4,6 ---	1-24
P,X	WO 02 060405 A (PEYROT JACQUES ;ALLART JEAN-CLAUDE (FR); LEFEVRE JEAN-MARIE (FR);) 8 August 2002 (2002-08-08) claims 1,6,9 ---	1-24
X	EP 0 321 287 A (HOPE CITY) 21 June 1989 (1989-06-21) page 3, line 33-35; claims 1,3 -----	10-15

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

"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

25 February 2003

Date of mailing of the international search report

16. 05. 2003

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Authorized officer  
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# INTERNATIONAL SEARCH REPORT

national application No.  
PCT/IT 02/00740

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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.:

1-27

### 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: 1-27

Pharmaceutical compositions containing sphingosine, the use thereof and a method for their preparation

2. Claims: 28, 29

Diagnostic in vitro method

3. Claims: 30-32

Assay method

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 02/00740

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