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(54) Title: POLYVINYLPIRROLIDONE AS A THERAPEUTICALLY ACTIVE COMPOUND FOR THE TREATMENT AND PREVENTION OF DISEASES INVOLVING BACTERIAL, VIRAL AND FUNGAL PATHOGENS

(57) Abstract: The present invention relates to polyvinylpyrrolidone for the treatment and prevention of diseases involving bacterial, fungal and viral pathogens with polyvinylpyrrolidone as therapeutically active compound, pharmaceutical compositions comprising polyvinylpyrrolidone and methods for the treatment and prevention of diseases involving bacterial, fungal and viral pathogens.



WO 2010/054858 A3

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K31/79 A61K45/06 A61P31/00

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)
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)

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.
X	KAPUR B L M ET AL: "Effect of polyvinyl pyrrolidone solutions on canine endotoxin shock" INDIAN JOURNAL OF MEDICAL RESEARCH, INDIAN COUNCIL OF MEDICAL RESEARCH, NEW DEHLI, IN, vol. 68, 1 August 1978 (1978-08-01), pages 360-367, XP008112715 ISSN: 0019-5340 page 361, left-hand column, paragraphs 4,5 page 365, left-hand column, last paragraph - page 366 ----- -/--	1-2,4-5, 15-16, 18-21, 26-28, 30-33, 35-36

☒ 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 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)
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- "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
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BICK H ET AL: "Investigations on polyvinylpyrrolidone in mice given Brucella endotoxin" PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY & MEDICINE, ACADEMIC PRESS INC. NEW YORK, US, vol. 93, no. 1, 1 January 1956 (1956-01-01), pages 7-10, XP008112716 ISSN: 0037-9727 page 9, left-hand column, paragraph 3 - right-hand column -----	1-2,4-5, 15-16, 18-21, 26-28, 30-33,36
X	DATABASE MEDLINE [Online] US NATIONAL LIBRARY OF MEDICINE (NLM), BETHESDA, MD, US; 1997, KÖNIG B ET AL: "Effects of Betaisodona on parameters of host defense." XP002547981 Database accession no. NLM9403254 abstract & DERMATOLOGY (BASEL, SWITZERLAND) 1997, vol. 195 Suppl 2, 1997, pages 42-48, ISSN: 1018-8665 -----	1,4-5, 15-16, 18-21, 26-32, 35-36
X	G.HIERHOLZER, K.REIMER, E.R.WEISSENBACHER: "Topische Infektionstherapie und Prophylaxe. Aktueller Stellenwert von PVP-Iod" 1996, GEORG THIEME VERLAG , STUTTGART, NEW YORK , XP002547978 page 4 page 4; table 3 page 6, right-hand column, paragraph 4 -----	1-5, 15-16, 18-23, 26-33, 35-36
X	GB 2 338 649 A (HAWTIN BRIAN FRANCIS [GB]) 29 December 1999 (1999-12-29) claims 1,9,19 page 4, lines 14-17 -----	1,4-5, 16,19, 21-23, 26-28, 30-32, 35-36
X	WO 03/070279 A (ALTANA PHARMA AG [DE]; DIETRICH RANGO [DE]; EISTETTER KLAUS [DE]; NEY) 28 August 2003 (2003-08-28) page 2, paragraph 2 claim 1 page 21 -----	1-4, 15-16, 21-23, 26-28, 30-32, 35-36

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2009/008403

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 008 905 A (BEECHAM GROUP PLC [GB]) 19 March 1980 (1980-03-19) claims 1,9 page 1, line 17 - page 2, line 2 -----	1-2,4, 15-16, 18-19, 21, 26-33, 35-36
X	DE 27 12 198 A1 (ABIC LTD) 3 November 1977 (1977-11-03) claim 1 page 3, paragraph 2 page 6, paragraph 4 pages 9-11; examples 3-7 -----	1,4-5, 15-16, 18-19, 21, 26-32,36
X	CH 434 240 A (CHEMICAL AND PHARMACEUTICAL PA [CH]) 30 April 1967 (1967-04-30) column 3, lines 33,34,59-63 column 4, lines 25-62 column 5, lines 53-59 column 6, lines 27-29 -----	1,4, 15-16, 21, 26-32,36
X	WO 93/16680 A1 (SMITHKLINE BEECHAM PLC [GB]) 2 September 1993 (1993-09-02) claims 1,6,8,10,13 page 1, lines 3-6,17,18,36-38 page 7, lines 19-30 -----	1-4, 15-16, 18-21, 26-32, 35-36
A	US 3 725 541 A (QUEVILLE A ET AL) 3 April 1973 (1973-04-03) claim 1 columns 13,14; example H column 5, line 5 - column 11, line 18 -----	1-5, 15-23, 26-36
A	FR 2 224 140 A (CHALAUST RENE [FR]) 31 October 1974 (1974-10-31) claim 1 page 1, lines 31-34 page 4, lines 21,22 -----	1-5, 15-23, 26-36

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/008403

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.:

see annex

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: 1-5, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with bacteria or archaea.

2. claims: 1-5, 9-13, 15-23, 26-36(partially)

Use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with bacteria or archaea.

3. claims: 1-5, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with bacteria or archaea.

4. claims: 1-4, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with protists.

5. claims: 1-4, 9-13, 15-23, 26-36(partially)

Use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with protists.

6. claims: 1-4, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with protists.

7. claims: 1-4, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of animals.

8. claims: 1-4, 9-13, 15-23, 26-36(partially)

Use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of animals.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. claims: 1-4, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of animals.

10. claims: 1-4, 6, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of fungi.

11. claims: 1-4, 6, 9-13, 15-23, 26-36(partially)

use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of fungi.

12. claims: 1-4, 6, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of fungi.

13. claims: 1-4, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of plants.

14. claims: 1-4, 9-13, 15-23, 26-36(partially)

Use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of plants.

15. claims: 1-4, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with a microorganism selected from the group of plants.

16. claims: 1-4, 7-8, 15-23, 26-36(partially)

Use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with viruses or viral microorganisms.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

17. claims: 1-4, 7-13, 15-23, 26-36(partially)

Use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with viruses or viral microorganisms.

18. claims: 1-4, 7-8, 14-23, 26-36(partially)

Use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection associated with viruses or viral microorganisms.

19. claims: 24-25(partially)

The use of PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection comprising the coating of medical and/or technical devices with the polymer in order to prevent the colonization of said devices by microorganisms.

20. claims: 24-25(partially)

The use of cross-linked PVP in prophylaxis, therapy, follow-up and/or aftercare of an infection comprising the coating of medical and/or technical devices with the polymer in order to prevent the colonization of said devices by microorganisms.

21. claims: 24-25(partially)

The use of a PVP copolymer in prophylaxis, therapy, follow-up and/or aftercare of an infection comprising the coating of medical and/or technical devices with the polymer in order to prevent the colonization of said devices by microorganisms.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/008403

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GB 2338649	A	29-12-1999	NONE	
WO 03070279	A	28-08-2003	AU 2003206924 A1 BR 0307739 A CA 2475923 A1 CN 1635909 A EC SP045238 A IS 7410 A JP 4163120 B2 JP 2005517724 T MA 27100 A1 MX PA04005759 A US 2006269600 A1 US 2005159492 A1	09-09-2003 25-01-2005 28-08-2003 06-07-2005 28-09-2004 18-08-2004 08-10-2008 16-06-2005 20-12-2004 10-09-2004 30-11-2006 21-07-2005
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