USE OF ANTIOXIDANTS FOR TREATING DEGENERATIVE DISC DISEASE

A therapeutic method of delivering anti-oxidants to an intervertebral disc is disclosed.
**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

<table>
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<th>Applicant's or agent's file reference</th>
<th>FOR FURTHER ACTION</th>
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<td>DEPUY SPINE, INC.</td>
<td>see Form PCT/ISA/210</td>
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<th>International application No.</th>
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<td>(Earliest) Priority Date (day/month/year)</td>
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This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

- It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. **With regard to the language,** the international search was carried out on the basis of:
      - [X] 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))

   b. [ ] With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. [X] Certain claims were found unsearchable (See Box No. II)

3. [X] Unity of Invention is lacking (see Box No. II)

4. **With regard to the title,**
   - [X] the text is approved as submitted by the applicant
   - [ ] the text has been established by this Authority to read as follows:
     
     USE OF ANTIOXIDANTS FOR TREATING DEGENERATIVE DISC DISEASE

5. **With regard to the abstract,**
   - [X] the text is approved as submitted by the applicant
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. **With regard to the drawings,**
   a. the figure of the drawings to be published with the abstract is Figure No. ____________
      - [ ] as suggested by the applicant
      - [ ] as selected by this Authority, because the applicant failed to suggest a figure
      - [ ] as selected by this Authority, because this figure better characterizes the invention

   b. [ ] none of the figures is to be published with the abstract

Form PCT/ISA/210 (first sheet) (April 2005)
### INTERNATIONAL SEARCH REPORT

**Box 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:
     - Although claims 1-31, 61-81 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

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 8.4(a).

**Box 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 affording 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.:
     - 1-31, 61-81

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-31, 61-81

   Use of antioxidants and/or trace elements or an iron binding agent for treating degenerative disc disease via transdiscal administration.

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2. claims: 32-60

   A syringe having a barrel containing an antioxidant and a second antioxidant or a trace element.

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## INTERNATIONAL SEARCH REPORT

### A. CLASSIFICATION OF SUBJECT MATTER

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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 database consulted during the international search (name of database and, where practical, search terms used)

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

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<td>A</td>
<td>HAWKES D: &quot;Alternative medicine: Musculoskeletal system&quot; CLINICAL TECHNIQUES IN SMALL ANIMAL PRACTICE, SAUNDERS, PHILADELPHIA, PA, US, vol. 17, no. 1, February 2002 (2002-02), pages 41-49, X904970125 ISSN: 1096-2867 page 41, column 1, paragraph 3 page 42, column 2, paragraph 3 - paragraph 4</td>
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* Special categories of cited documents:

- **A** document defining the general state of the art which is not considered to be of particular relevance
- **B** earlier document but published on or after the international filing date
- **L** document which may throw doubts on priority claims(s) or on which the public can establish the publication date of another document or on which a special reason (as specified) exists
- **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 novel or cannot be considered to involve an inventive step when the document is taken in combination with one or more of the other such documents, such combination being obvious to a person skilled in the art.

**Z** document member of the same patent family

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the International search: 30 May 2006

Date of mailing of the International search report: 25.09.2006

Name and mailing address of the ISA:

European Patent Office, P.O. 6818 Patentboom 2 NL-2280 HJ Wassenaar
Tel. (31-70) 343-2040, TeX 31 651 00 nl, Fax (31-70) 343-3016

Authorized officer:

Bonzano, Camilla
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<td>FOLDES, ISTVAN ET AL: &quot;Trace elements in tissues of normal and vitamin D2-treated rats&quot; ACTA BIOLOGICA ACADEMIAE SCIENTIARUM HUNGARICA, 26(3-4), 141-50 CODEN: ABAHAU; ISSN: 0001-5288, 1975, XP008064587 page 148, paragraph 4</td>
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<td>WO 2005/110276 A (MASSACHUSETTS GENERAL HOSPITAL; MURATOGLU, ORHUN K) 24 November 2005 (2005-11-24) page 1, paragraph 2 claim 1</td>
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