Title: PHARMACEUTICAL DOSAGE FORM FOR ORAL ADMINISTRATION OF LOW MOLECULAR WEIGHT HEPARIN

Abstract: A delayed release pharmaceutical dosage form for oral administration of a hydrophilic drug, e.g., a polysaccharide drug such as a low molecular weight heparin, are provided. The dosage form comprises a composition of: (a) a therapeutically effective amount of low molecular weight heparin; (b) a bile salt or bile acid; (c) at least one surfactant selected form hydrophilic surfactants, lipophilic surfactants, and mixtures thereof; and a means for delaying release of the composition from the dosage form following oral administration. Osmotic drug delivery systems for oral administration of a hydrophilic drug are also provided, wherein an osmotically activated device houses the drug, a bile salt or bile acid, and at least one surfactant selected from the group consisting of hydrophilic surfactants, lipophilic surfactants, and mixtures thereof. Methods for administering hydrophilic drugs, particularly polysaccharide drugs such as low molecular weight heparin, are also provided.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(7) : A61K 9/14, 9/16, 9/20, 9/22, 9/26, 9/48, 9/54, 9/64
   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)

   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)
   WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 3,510,561 A (KOH) 05 May 1970 (05.05.1970), column 2, columns 5-6, columns 13-14.</td>
<td>1-7, 52-54, 67, 77</td>
</tr>
<tr>
<td>Y</td>
<td>US 4,579,730 A (KIDRON et al.) 01 April 1986 (01.04.1986), abstract, columns 1-4.</td>
<td>1, 8-19, 29-31, 32, 67</td>
</tr>
<tr>
<td>Y</td>
<td>US 4,727,109 (SCHMIDT et al.) 23 February 1988 (23.02.1988), abstract, columns 1-4, and examples.</td>
<td>1,77</td>
</tr>
</tbody>
</table>


Further documents are listed in the continuation of Box C. See patent family annex.

Date of the actual completion of the international search: 14 November 2002 (14.11.2002)

Date of mailing of the international search report: 03 DEC 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Susan T. Tran

Telephone No. (703) 308-1255

Form PCT/ISA/210 (second sheet) (July 1998)
INTERNATIONAL SEARCH REPORT

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim 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. ☐ Claim 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:

Please See Continuation 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.: 1-32, 52-61, and 67-80

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant’s protest.

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1998)
Continuation of Item 4 of the first sheet:
Title is too long.
Suggested new title as follow:
"Pharmaceutical dosage form for oral administration of low molecular weight heparin".

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING
The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: they do not share the same essential technical features that define the "special technical feature" necessary to specify a contribution over the prior art. The element common to all the groups is delayed release dosage form, which is known in the art and, therefore, cannot be said to be the special technical feature which makes a contribution over the prior art. All other elements differ technically from each other, e.g., the enteric coating, or the polymer of the delayed release dosage, each of which are known in the prior art. Thus, the technical feature of group I is not special. Accordingly, the groups do not relate to a single inventive concept under PCT rule 13.1.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-32, 52-61, and 67-80, drawn to a pharmaceutical dosage form.

Group II, claims 33-38, drawn to a delayed release dosage form with enteric coating polymer.

Group III, claims 39-51, drawn to a pharmaceutical composition.

Group IV, claims 62-66, drawn to method for administering.