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In re: U.S. Patent 5,968,976 :

Issued: October 19, 1999 : BOX: Patent Ext.

Inventors: Barry A. MURRER, Nigel A. POWELL :

For: PHARMACEUTICAL COMPOSITION  
CONTAINING SELECTED  
LANTHANUM CARBONATE  
HYDRATES :

Assignee: Shire International Licensing B.V. :

COPY

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Commissioner of Patents and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPLICATION FOR EXTENSION OF  
TERM UNDER 35 U.S.C. §156**

SIR:

Applicant, Shire International Licensing B.V., a corporation organized and existing under and by virtue of the laws of The Netherlands, and having a principal place of business at Fred. Roeskestraat 123 Olympic Plaza, 1076EE, Amsterdam, The Netherlands, represents that it is the assignee of the entire interest in and to United States Letters Patent No. 5,968,976 granted to Barry A. Murrer and Nigel A. Powell on October 19, 1999, for "Pharmaceutical Composition Containing Selected Lanthanum Carbonate Hydrates". An assignment of said patent from the inventors was previously executed in the name of AnorMed Inc. and was recorded in the U.S. Patent and Trademark Office (PTO) at Reel 009638/ Frame 0749; a subsequent assignment of said patent was executed by AnorMed, Inc. in favor of Shire International Licensing B.V. on December 1, 2004 and was recorded in the PTO at Reel 015469/0166. A copy of this assignment is enclosed as Attachment A.

The active ingredient of FOSRENOL™ is lanthanum carbonate hydrate of the formula  $La_2(CO_3)_3 \cdot xH_2O$ , wherein x is on average 4.5, which falls within the ambit of the claims of {W:\20342\8200926000\00320064.DOC } }

2005E-0248

APP 1

U.S. Patent 5,968,976.

Shire Development Inc. (Marketing Applicant) has been granted approval of its New Drug Application (NDA) by the Food and Drug Administration (FDA) for commercial marketing or use of FOSRENOL™. Shire International Licensing B.V. and Shire Development Inc. are both wholly owned subsidiaries of Shire Pharmaceuticals Group Plc. A power of attorney to the undersigned executed by Ms. Shona S. McDiarmid, is attached as Exhibit B. A corporate resolution by Shire International Licensing B.V., authorizing Ms. McDiarmid to act as a representative of and on behalf of Shire International Licensing B.V. in connection with all patent matters is attached as Exhibit C. The undersigned has thus been authorized to act on behalf of Shire International Licensing B.V., the assignee of Letters Patent No. 5,968,976.

Applicant, acting through its duly authorized attorney, hereby submits this application for extension of patent term under 35 U.S.C. §156 by providing the following information required by the rules promulgated by the PTO (37 C.F.R. §1.7100 - 1.785). For the convenience of the PTO, the information presented in this application is in a format which follows the requirements of 37 C.F.R. §1.740.

- (1) **A complete identification of the approved product as by appropriate chemical and generic name, physical structure or characteristics.**

The approved product, FOSRENOL™, is a chewable tablet formulation containing, as the active ingredient, lanthanum carbonate hydrate. The lanthanum carbonate hydrate has the formula:  $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein x is on average 4.5. Lanthanum carbonate hydrate can be represented by the following structural formula:



**combination with other active ingredients), the use for which it was approved, and the provision of law under which it was approved.**

The only active ingredient in FOSRENOL™ is lanthanum carbonate hydrate ( $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein  $x$  is on average 4.5). The active ingredient has not been previously approved for commercial marketing or use under Section 505 or any other section of the Federal Food, Drug and Cosmetic Act prior to its approval in NDA-21-468 by the FDA. It has not been approved for commercial marketing or use under the Public Health Service Act, or the Virus-Serum-Toxin Act.

- (5) **A statement that the application is being submitted within the sixty day period permitted for submission pursuant to § 1.720(f) and an identification of the date of the last day on which the application could be submitted.**

This application for extension of patent term under 35 U.S.C. 156 is being submitted within the permitted 60 day period pursuant to 37 C.F.R. §1.720(f), which period will expire December 25, 2004.

- (6) **A complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, the date of issue, and the date of expiration.**

The complete identification of the patent for which extension is being sought is as follows:

Inventors:	Barry A. Murrer and Nigel A. Powell
Patent Number:	5,968,976
Issue Date:	October 19, 1999
Expiration Date:	March 19, 2016

- (7) **A copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings.**

See Attachment D for a complete copy of the patent identified in paragraph (6) hereof.

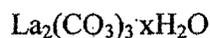
- (8) **A copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent.**

No certificate of correction or re-examination certificate has been issued with regard to U.S. Patent 5,968,976. No disclaimer has been filed in US 5,968,976. Enclosed at Attachment E is a copy of the Maintenance Fee Statement which shows that the maintenance fee for year four has been paid.

- (9) **A statement that the patent claims the approved product, or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which at least one such patent claim reads on:**
- (i) **The approved product, if the listed claims include any claim to the approved product;**
  - (ii) **The method of using the approved product, if the listed claims include any claim to the method of using the approved product; and**
  - (iii) **The method of manufacturing the approved product, if the listed claims include any claim to the method of manufacturing the approved product.**

U.S. Patent 5,968,976 claims the approved product FOSRENOL™ and methods of using and manufacturing the approved product. Specifically, compositions containing the active ingredient lanthanum carbonate hydrate ( $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein x is on average 4.5) and methods of using such compositions are covered under claims 1-4 and 7-10 which follow:

1. A pharmaceutical composition for the treatment of hyperphosphataemia comprising lanthanum carbonate of the formula



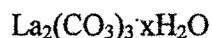
where x has a value from 3 to 6, in admixture with a pharmaceutically acceptable diluent or carrier in a form for administration to the gastrointestinal tract.

2. A composition according to claim 1, wherein x has a value from 3.5 to 5.

3. A composition according to claim 2, wherein x has a value from 3.8 to 4.5.

4. A composition according to any one of claims 1 to 3 in unit dosage form to provide from 0.1 to 20 g/day.

7. A method to treat hyperphosphataemia in a subject which method comprises administering to said subject an amount of lanthanum carbonate of the formula



wherein x has a value from 3 to 6 effective to treat said hyperphosphataemia.

8. The method of claim 7 wherein x has a value from 3.5 to 5.

9. The method of claim 8 wherein x has a value from 3.8 to 4.5.

10. The method of any of claims 7-9 wherein said administering is by an oral route.

(i) Claims 1-4 of the patent read on the approved product. Thus, the approved product incorporates lanthanum carbonate hydrate ( $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein x is on average 4.5) in admixture with a pharmaceutically acceptable diluent or carrier in a form for administration to the gastrointestinal tract (claim 1). Further, x (as defined above) has a value from 3.5 to 5 (claim 2), and a value from 3.8 to 4.5 (claim 3).

Still further, the unit dosage forms of FOSRENOL™ are 250 mg or 500 mg tablets as elemental Lanthanum, which corresponds to 0.0018 or 0.0036 moles of ( $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein x is on average 4.5). The molecular weight of FOSRENOL™ is 457.8 g. Thus, each

tablet provides 0.82g or 1.65g of  $\text{La}_2(\text{CO}_3)_3 \cdot x\text{H}_2\text{O}$ , wherein x is on average 4.5. Thus, claim 4 reads on FOSRENOL™.

(ii) Claims 7-10 of the patent read on the method of using the approved product. Thus, FOSRENOL™ is used to treat hyperphosphataemia in a subject (claims 7-9) and is administered by an oral route (claim 10).

**(10) A statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services or the Secretary of Agriculture, as appropriate, to determine the applicable regulatory review period as follows:**

**(i) For a patent claiming a human drug, antibiotic, or human biological product:**

**(A) The effective date of the investigational new drug (IND) application and the IND number;**

**(B) The date on which a new drug application (NDA) application or a Product License Application (PLA) was initially submitted and the NDA or PLA number; and**

**(C) The date on which the NDA was approved or the Product License issued;**

....

The relevant dates and information pursuant to 35 U.S.C. §156(g) to enable the Secretary of Health and Human Services to determine the applicable regulatory review period are as follows:

**(i)(A) The Investigational New Drug Application (IND-55,054) for lanthanum carbonate hydrate was filed January 14, 1998 and became effective on February 13, 1998.**

**(B) The New Drug Application (NDA-21-468) for FOSRENOL™ was initially submitted to the FDA on April 30, 2002, and**

**(C) the New Drug Application was approved on October 26, 2004.**

- (11) **A brief description beginning on a new page of the significant activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities.**

A brief description of the significant activities undertaken by marketing applicant during the applicable regulatory review period is attached hereto as Attachment F and is a chronological synopsis of the major communications between Applicant and the FDA from **July 7, 1997 to October 20, 2004.**

- (12) **A statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;**

Applicant is of the opinion that U.S. Patent 5,968,976 is eligible for extension under 35 U.S.C. §156 because it satisfies all of the requirements for such extension as follows:

- (a) 35 U.S.C. §156(a); 37 C.F.R. §1.720(a)

U.S. Patent 5,968,976 claims (i) a product, and (ii) a method of using a product, as defined in 37 C.F.R. § 1.710(a).

- (b) 35 U.S.C. §156(a)(1); 37 C.F.R. §1.720(g)

The term of U.S. Patent 5,968,976 has not expired before submission of this application, which is believed to be in compliance with 37 CFR § 1.741;

- (c) 35 U.S.C. §156(a)(2); 37 C.F.R. §1.720(b)

The term of U.S. Patent 5,968,976 has never been extended under 35 U.S.C. § 156(e)(1);

- (d) 35 U.S.C. §156(a)(3); 37 C.F.R. §1.730

The application for extension is submitted by a registered practitioner on behalf of the owner of record in accordance with the requirement of 35 U.S.C. §156(d) and the rules of the U.S. Patent and Trademark Office. Proof that the applicant is the owner of record is provided by a copy of the assignment of U.S. Pat. No. 5,968,976 executed by AnorMed Inc. in favor of Shire International Licensing B.V. on December 1, 2004, and submitted to the U.S. Patent and Trademark Office for recordation on December 16, 2004



- of **2447** days, which is the sum of (ii) and (iii) below;
- (ii) The period of review under 35 U.S.C. §156(g)(1)(B)(i), the IND period, began on **February 13, 1998** and ended on **April 30, 2002**, which is **1537** days.
  - (iii) The period of review under 35 U.S.C. §156(g)(1)(B)(ii), the "Application Period," began on **April 30, 2002** and ended **October 26, 2004**, which is **910** days.
- (j) The regulatory review period upon which the period of extension is calculated is the entire regulatory review period as determined in subparagraph 12(i)(i) hereof (**2447** days) less
- (i) The number of days in the regulatory review period which were on or before the date on which the patent issued (October 19, 1999), which is **613** days, and
  - (ii) **The number of days during which applicant did not act with due diligence, which is zero (0) days, and**
  - (iii) One-half the number of days determined in subparagraph 12(i)(ii) hereof (**1537**) after subtracting therefrom the number of days of subparagraphs (12)(j)(i) and (j)(ii) hereof (**613** days in total), or **462** days,
- which totals **1372** days.
- (k) The number of days as determined in subparagraph 12(j)(iii) hereof (**1372** days) when added to the original term of the patent would result in the date **December 21, 2019**.
- (l) Fourteen (14 years) when added to the date of the NDA approval (**October 26, 2004**) would result in the date **October 26, 2018**.
- (m) The earliest date as determined in paragraphs 12(k) and 12(l) is **October 26, 2018**.
- (n) The issuance of the original exemption occurred after September 24, 1984. Five (5) years when added to the original expiration date of the patent (**March 19, 2016**) would result in the date **March 19, 2021**.
- (o) The earlier date as determined in paragraphs (m) and (n) is **October 26, 2018**. The patent is currently set to expire on March 19, 2016. Therefore, the length

of extension of patent term claimed by applicant is **951 days or 2 years and 221 days.**

- (13) **A statement that the Applicant acknowledges a duty to disclose to the Director of the U.S. Patent and Trademark Office and to the Secretary of Health and Human Services or the Secretary of Agriculture any information which is material to the determination of entitlement to the extension sought.**

Applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any Information which is material to the determination of entitlement to the extension sought.

- (14) **Prescribed Fee:**

The prescribed fee pursuant to 37 C.F.R. §1.20(j) for receiving and acting upon this application is to be charged to the Deposit Account of Applicant as authorized in the attached letter, which is submitted in triplicate.

- (15) **The name, address and telephone number of the person to whom inquiries and correspondence relating to the application for patent term extension are to be directed**

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DARBY & DARBY P.C.  
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New York, 10150-5257  
(212) 527-7700  
(212) 753-6237 (Fax)

Four copies of these application papers, certified as such, are being submitted herewith, in compliance with 37 C.F.R. § 1.740(b) and as suggested by MPEP § 2753.

Respectfully submitted,



Marc S. Gross

Reg. No. 19,614

Attorney for Applicant

DARBY & DARBY P.C.  
Post Office Box 5257  
New York, NY 10150-5257  
212-527-7700

**Attachment List**

**Attachment A** -- Assignment of U.S. Patent No. 5,968,976 from AnorMed, Inc. in favor of Shire International Licensing B.V., executed December 1, 2004, recorded at Reel/Frame 015469/0166.

**Attachment B** -- Power of Attorney, signed by Shona McDiarmid, on behalf of Shire Pharmaceuticals Group Plc, and Statement Under 37 C.F.R. § 1.73(b).

**Attachment C** -- Statement authorizing Shona McDiarmid to act on behalf of Shire International Licensing B.V.

**Attachment D** -- Copy of U.S. Letters Patent No. 5,968,976

**Attachment E** -- Maintenance Fee Statement for U.S. Letters Patent No. 5,968,976

**Attachment F** -- Chronological synopsis of the major communications between Applicant and the FDA