



US007300666B2

(12) **United States Patent**
Jordan

(10) **Patent No.:** **US 7,300,666 B2**
(45) **Date of Patent:** ***Nov. 27, 2007**

(54) **MIXTURE FOR TRANSDERMAL DELIVERY OF LOW AND HIGH MOLECULAR WEIGHT COMPOUNDS**

(75) Inventor: **Frederick L. Jordan**, Santa Ana, CA (US)

(73) Assignee: **JRX Biotechnology, Inc.**, Irvine, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 53 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/416,289**

(22) Filed: **May 1, 2006**

(65) **Prior Publication Data**

US 2006/0193901 A1 Aug. 31, 2006

Related U.S. Application Data

(63) Continuation of application No. 10/856,567, filed on May 28, 2004, which is a continuation-in-part of application No. 10/789,836, filed on Feb. 27, 2004, which is a continuation of application No. 10/183,764, filed on Jun. 25, 2002, now Pat. No. 6,759,056, which is a continuation of application No. 09/350,043, filed on Jul. 8, 1999, now Pat. No. 6,946,144.

(60) Provisional application No. 60/510,615, filed on Oct. 10, 2003, provisional application No. 60/092,061, filed on Jul. 8, 1998.

(51) **Int. Cl.**

A61K 9/70 (2006.01)
A61K 31/56 (2006.01)
A61K 38/00 (2006.01)
A61F 13/00 (2006.01)

(52) **U.S. Cl.** **424/449; 424/725; 514/2; 514/169; 514/887**

(58) **Field of Classification Search** **424/449, 424/725; 514/2, 169, 887**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,318,960 A * 6/1994 Toppo 514/159
5,431,924 A 7/1995 Ghosh et al.
5,472,713 A 12/1995 Fein et al.
5,571,671 A 11/1996 Potter
5,614,212 A 3/1997 D'Angelo et al.
5,665,378 A 9/1997 Davis et al.
5,708,038 A 1/1998 Davis
5,716,625 A 2/1998 Hahn et al.
5,744,368 A 4/1998 Goldgaber et al.
5,837,853 A 11/1998 Takashima et al.
5,840,746 A 11/1998 Ducharme et al.
5,849,334 A 12/1998 Rivlin
5,861,268 A 1/1999 Tang et al.
5,885,597 A 3/1999 Botknecht et al.

5,891,651 A 4/1999 Roche et al.
5,891,857 A 4/1999 Holt et al.
5,958,384 A 9/1999 Holick
6,103,246 A 8/2000 Tisdale et al.
6,444,234 B1 9/2002 Kirby et al.
6,759,056 B2 * 7/2004 Jordan 424/449
6,787,152 B2 9/2004 Kirby et al.
6,946,144 B1 * 9/2005 Jordan 424/449
2003/0104040 A1 6/2003 Kirby et al.
2004/0170676 A1 * 9/2004 Jordan 424/449
2004/0202709 A1 10/2004 Kirby et al.
2005/0019384 A1 * 1/2005 Jordan 424/449
2006/0188531 A1 * 8/2006 Jordan 424/400
2006/0188532 A1 * 8/2006 Jordan 424/400

FOREIGN PATENT DOCUMENTS

WO WO 92/08470 5/1992
WO WO 97/09992 A1 3/1997
WO WO 98/03163 1/1998
WO WO 98/33474 8/1998
WO WO 98/34629 8/1998

OTHER PUBLICATIONS

Aloe Laboratories. Manufacturing Procedures. Product: Regular Traditional Hand Fillet Aloe Vera Juice: 1 page.
Amadio, et al. 1993. Nonsteroidal anti-inflammatory drugs. *Post-graduate Medicine*, 93(4):73-97.
Barel and Clarys. 1995. Study of the Stratum Corneum Function by Transepidermal Water Loss Measurements: Comparison between Two Commercial Instruments. *Skin Pharmacol*, 8:186-195.
Biomedical Information Services Ltd. 1996. Inspection Criteria. General Standard for Testing Purity of Aloe Vera: 7 pages.
Bronaugh and Collier. 1991. In Vitro Percutaneous Absorption Studies: Principle, Fundamentals, and Applications, eds., Bronaugh and Malibach, Boca Rator, Fl. CRC Press, pp. 237-241.
Chatterm Inc. 1999. Packaging-Flexall QuickGel.
Cohen, et al. 1992. Wound Healing/Biochemical and Clinical Aspects, 1st ed. WB Saunders, Philadelphia.
Collier et al. 1989. Maintenance of Skin Viability during in Vitro Percutaneous Absorption/Metabolism Studies. *Toxicology and Applied Pharmacology*, 99:522-533.
Croda, "Guide to specialty ingredients for the personal care industry," pp. i-iii and 1-42 (2000).

(Continued)

Primary Examiner—Johann R. Richter
Assistant Examiner—Konata M. George
(74) *Attorney, Agent, or Firm*—Knobbe Martens Olson & Bear LLP

(57) **ABSTRACT**

The present invention relates to the discovery of a transdermal delivery system that can deliver high molecular weight pharmaceuticals and cosmetic agents to skin cells. A novel transdermal delivery system with therapeutic and cosmetic application and methods of use of the foregoing is disclosed.

121 Claims, No Drawings