United States Patent [19]

Bawa et al.

[11] **Patent Number: 4,931,279**

[45] **Date of Patent: Jun. 5, 1990**

[54] **SUSTAINED RELEASE FORMULATION CONTAINING AN ION-EXCHANGE RESIN**

[75] Inventors: **Rajan Bawa**, Fairport; **Dominic V. Ruscio**, Rochester, both of N.Y.

[73] Assignee: **Bausch & Lomb Incorporated**, Rochester, N.Y.

[21] Appl. No.: **224,199**

[22] Filed: **Jul. 21, 1988**

Related U.S. Application Data

[63] Continuation of Ser. No. 766,605, Aug. 16, 1985, abandoned.

[51] **Int. Cl.**[5] **A01N 25/26**; A61J 3/10; A61K 31/74; C08F 8/00

[52] **U.S. Cl.** **424/427**; 424/429; 424/78; 424/79; 424/80; 424/81; 525/326.1; 525/326.3; 525/326.6; 525/329.7; 525/330.3; 525/332.2; 525/333.3

[58] **Field of Search** ..... 424/78, 79, 80, 81, 424/19, 21, 22, 427, 429; 351/160 R, 160 H; 525/326.1, 326.3, 326.6, 329.7, 330.3, 332.2, 333.3

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,867,519	2/1975	Michaels	424/19
3,962,414	6/1976	Michaels	424/19
3,966,902	6/1976	Chromecek	424/81
3,987,163	10/1976	Rankin	424/78
4,127,674	11/1978	Leopold	424/324
4,144,317	3/1979	Higuchi et al.	424/21
4,178,361	12/1979	Cohen et al.	424/22
4,207,890	6/1980	Mamajek et al.	128/223
4,265,879	5/1981	Fields et al.	424/81
4,271,143	6/1981	Schoenwald et al.	424/78
4,407,792	10/1983	Schoenwald et al.	424/81
4,462,982	7/1984	Samejimu et al.	424/35
4,521,414	6/1985	Chiou et al.	514/229
4,615,697	10/1986	Robinson	424/19

Primary Examiner—Nathan M. Nutter
Attorney, Agent, or Firm—Christopher E. Blank

[57] **ABSTRACT**

A sustained-release polymeric hydrogel dosage form useful for topical, systemic or transdermal administration of a medicinal agent comprising a cross-linked, polymerized hydrophilic polymer, an ion-exchange resin, a cross-linking agent, an optical hydrophobic polymer and said medicinal agent in a therapeutically effective amount.

23 Claims, No Drawings