

United States Patent [19]

Mehta et al.

[11] Patent Number: **4,728,512**

[45] Date of Patent: **Mar. 1, 1988**

[54] **FORMULATIONS PROVIDING THREE DISTINCT RELEASES**

[75] Inventors: **Atul M. Mehta, Ramsey, N.J.;
Lizabeth A. Bachand; Thomas W.
Leonard, both of Plattsburgh, N.Y.;
Ronald N. Warner, Grand Isle, Vt.**

[73] Assignee: **American Home Products Corporation, New York, N.Y.**

[21] Appl. No.: **836,033**

[22] Filed: **Mar. 4, 1986**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 731,175, May 6, 1985, abandoned.

[51] Int. Cl.⁴ **A61K 9/52; A61K 9/54; A61K 9/58**

[52] U.S. Cl. **424/458; 424/453; 424/457; 424/459; 424/461; 424/462**

[58] Field of Search **424/14, 16, 19-22, 424/37, 453, 457, 458, 459, 461, 462**

[56] References Cited

U.S. PATENT DOCUMENTS

2,809,918	10/1957	Hermelin	424/19
2,921,883	1/1960	Reese et al.	424/19
3,119,742	1/1964	Heimlich et al.	424/19
3,175,521	3/1965	Hershberg	424/14
3,835,221	9/1974	Fulberth et al.	424/19
3,859,431	1/1975	Newton et al.	424/37
4,138,475	2/1979	Mc Ainch et al.	424/21
4,173,626	11/1979	Dempski et al.	424/20
4,248,856	2/1981	Guley et al.	424/19

4,248,857	2/1981	De Nesle et al.	424/21
4,248,858	2/1981	Guley et al.	424/21
4,294,819	10/1981	Tencza	424/14
4,309,404	1/1982	De Nesle et al.	424/21
4,309,405	1/1982	Guley et al.	424/21
4,309,406	1/1982	Guley et al.	424/21
4,339,428	7/1982	Tencza	424/21
4,524,060	6/1985	Mushal et al.	424/22

FOREIGN PATENT DOCUMENTS

1204580	9/1970	United Kingdom	424/37
2039737	8/1980	United Kingdom	354/193

OTHER PUBLICATIONS

F. W. Goodhart et al, *Pharmaceutical Technology*, pp. 64-71, Apr. 1984.

Primary Examiner—Shep K. Rose
Attorney, Agent, or Firm—John W. Routh

[57] ABSTRACT

A therapeutic preparation consisting of three groups of spheroids containing an active medicinal substance. The first group of spheroids is uncoated and rapidly disintegrates upon ingestion to release an initial dose of medicinal substance a second group of spheroids is coated with a pH sensitive coat to provide a second dose and a third group of spheroids is coated with a pH independent coat to provide a third dose. A powder blend of active medicinal substance may be substituted for the first group of uncoated spheroids.

The therapeutic preparation may be utilized as a mixture of groups of spheroids in a capsule.

9 Claims, 6 Drawing Figures

FIG. 1

DISSOLUTION PROFILE OF COMPOSITE
CAPSULE PRODUCED IN EXAMPLE 3

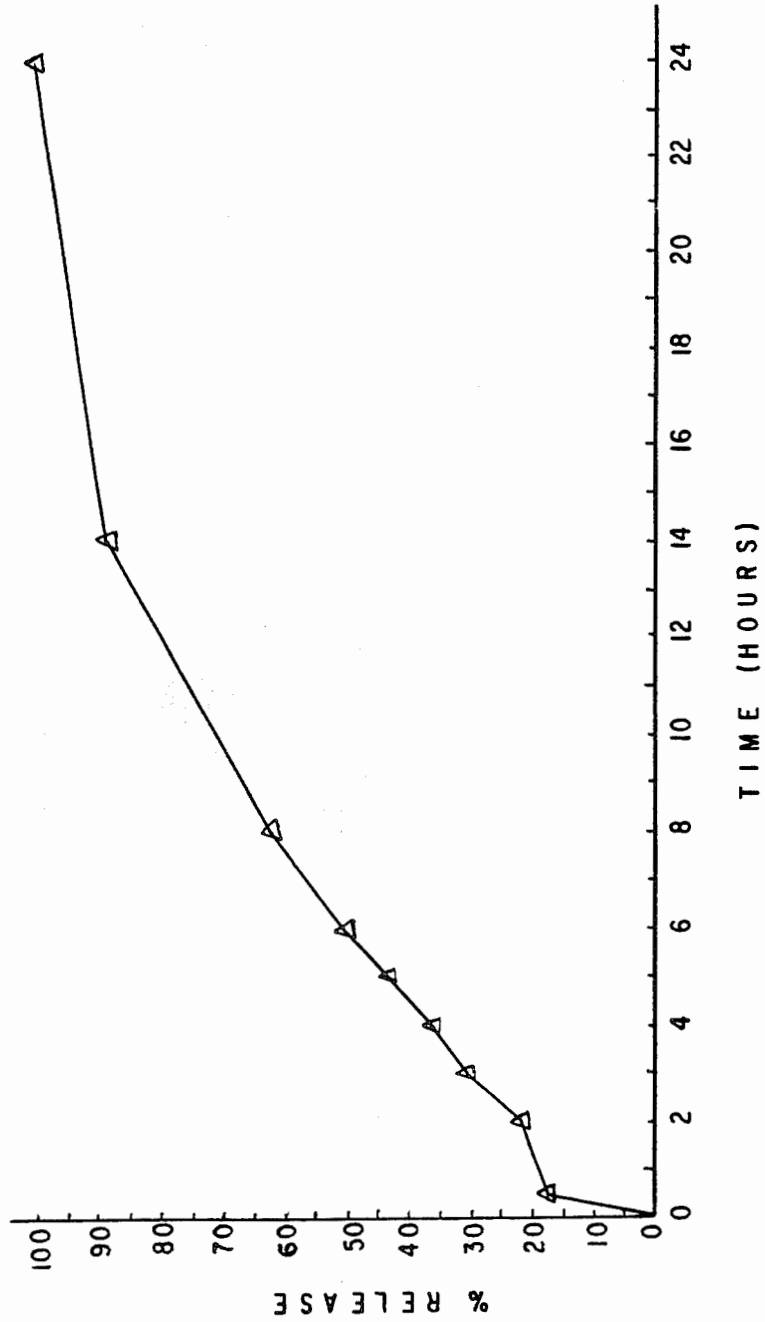


FIG. 2

PROPRANOLOL HCl DISSOLUTION PROFILE OF FIRST DOSE
IMMEDIATE RELEASE IN EXAMPLES 2,3 & 4 UNCOATED
SPHERES VS EXAMPLE 1 POWDER BLEND

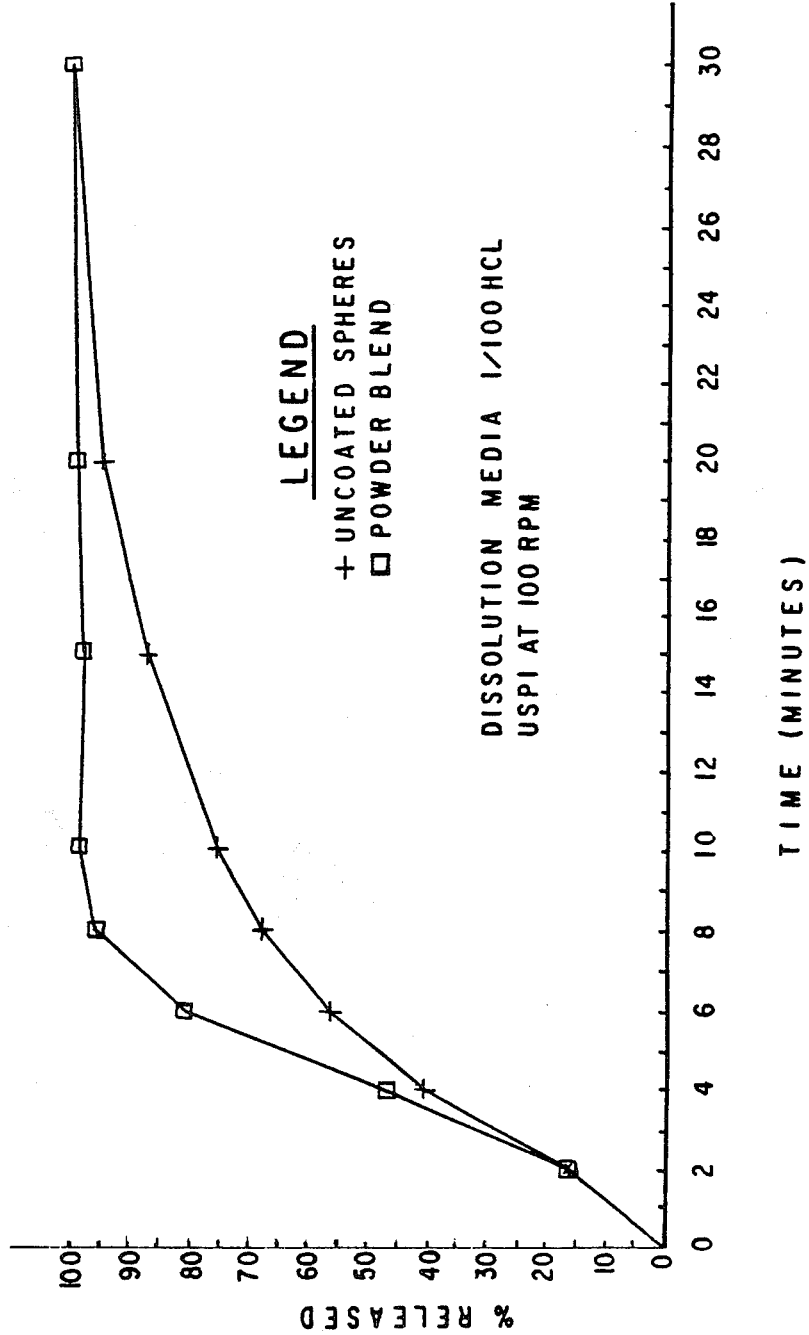


FIG. 3

DISSOLUTION PROFILE OF SECOND DOSE IN
EXAMPLE 1, 2, 3 & 4

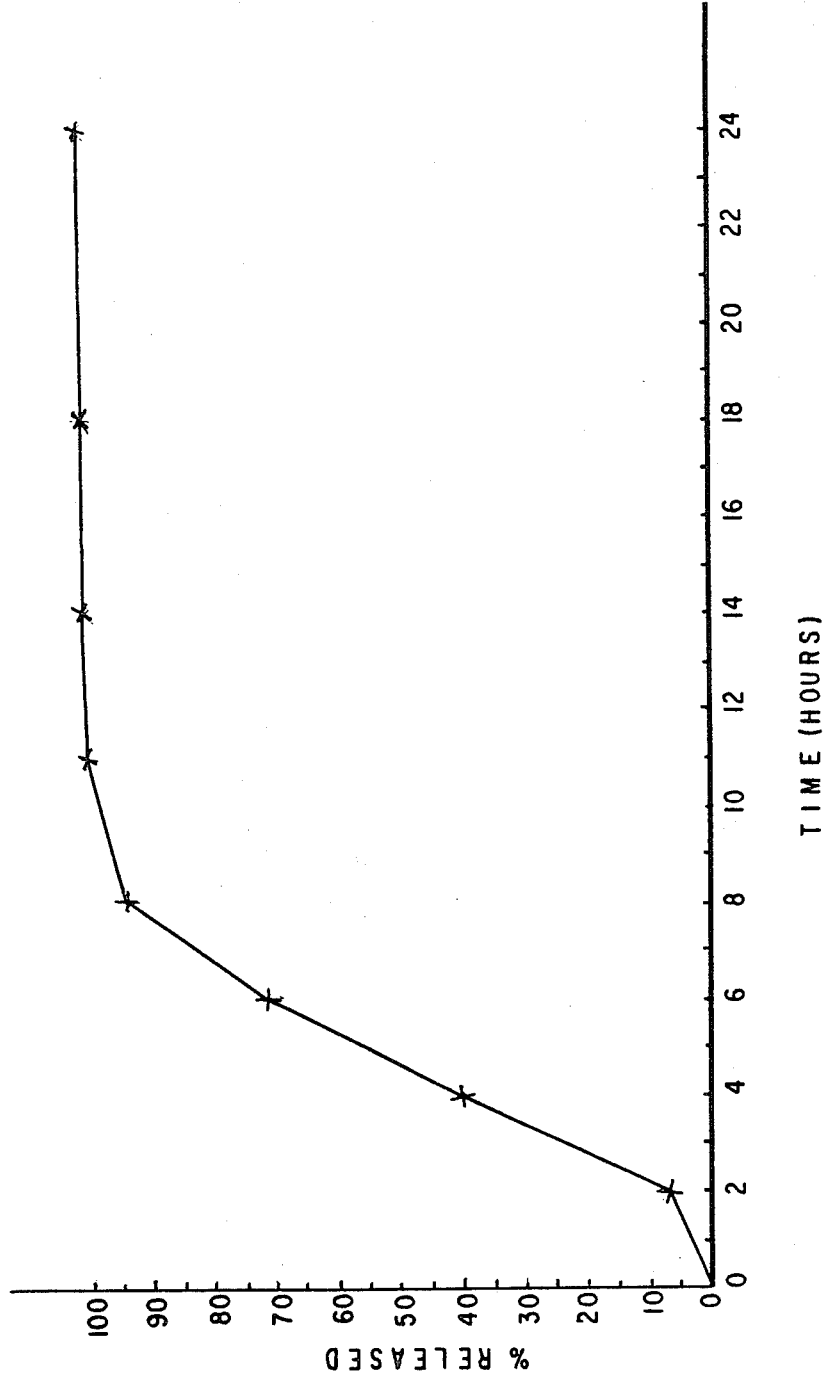
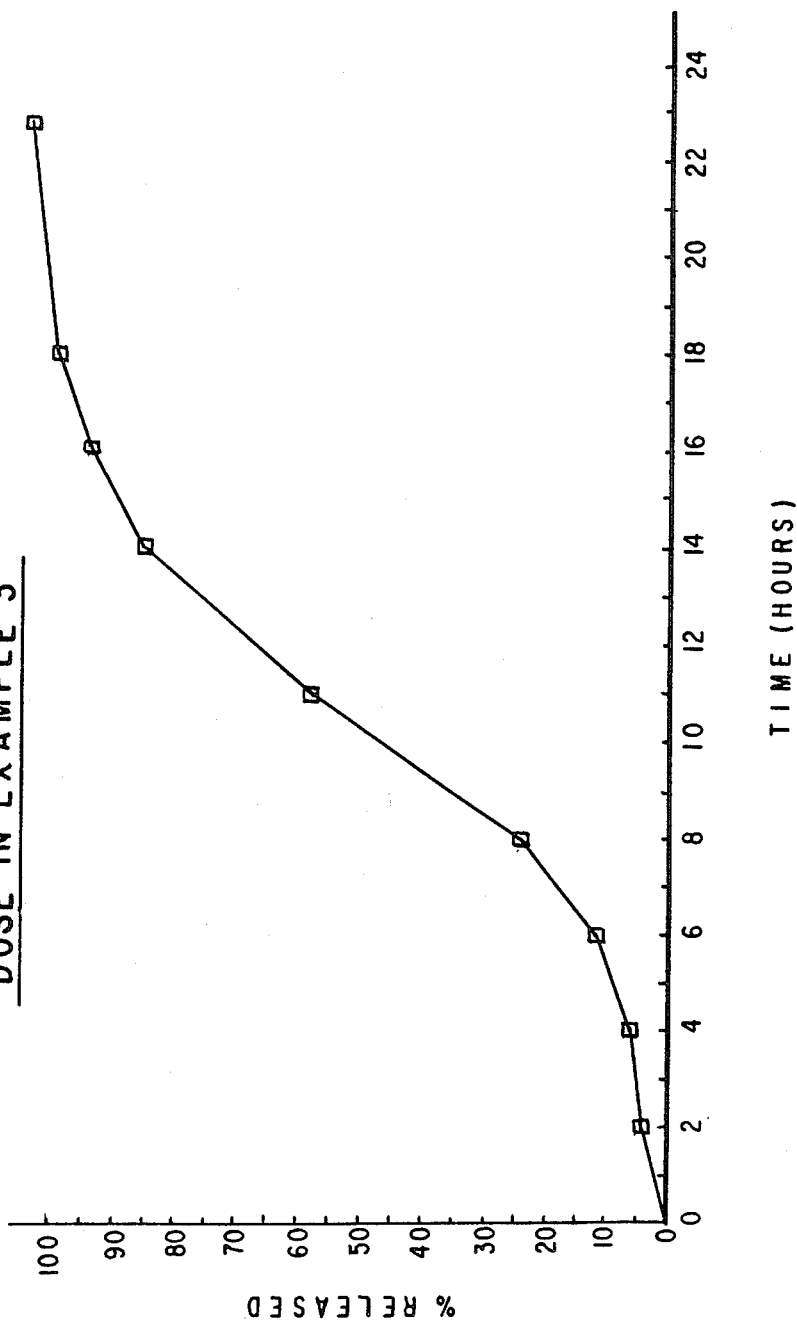


FIG. 4

DISSOLUTION PROFILE OF THIRD
DOSE IN EXAMPLE 3



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.