



US005234906A

United States Patent [19]

Young et al.

[11] **Patent Number:** **5,234,906**[45] **Date of Patent:** **Aug. 10, 1993**[54] **HYPERGLYCEMIC COMPOSITIONS**[75] Inventors: **Andrew Young**, San Diego; **Garth J. S. Cooper**, Solana Beach, both of Calif.[73] Assignee: **Amylin Pharmaceuticals, Inc.**, San Diego, Calif.[21] Appl. No.: **640,478**[22] Filed: **Jan. 10, 1991**[51] Int. Cl.⁵ **A61K 37/28**[52] U.S. Cl. **514/12; 514/21**

[58] Field of Search 514/12, 21, 808, 866, 514/884

[56] **References Cited****U.S. PATENT DOCUMENTS**

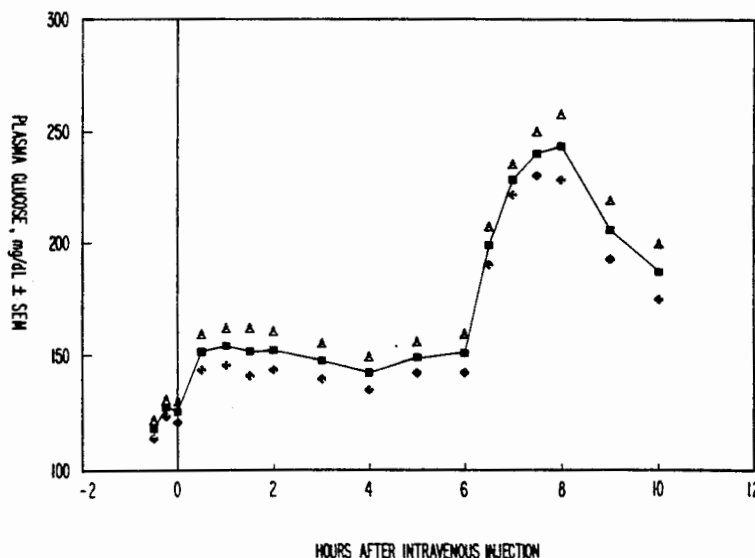
4,826,763 5/1989 Norris et al. 435/69.4

FOREIGN PATENT DOCUMENTS

309100 3/1989 European Pat. Off. .

OTHER PUBLICATIONSLeighton et al., "Pancreatic Amylin and Calcitonin Gene-Related Peptide Cause Resistance to Insulin . . .", *Nature* 335: 632-35 (1988).Yamaguchi et al., "Calcitonin Gene-Related Peptide and Induction of Hyperglycemia . . .", *Diabetes* 39: 168-74 (Feb. 1990).Molina et al., "Induction of Insulin Resistance In Vivo by Amylin and CGRP", *Diabetes* 39: 260-65 (Feb. 1990).Cooper et al., *Biochem. Biophys. Acta* 1014:247-58 (1989).Cooper et al., *Proc. Nat'l. Acad. Sci., USA* 85:7763-66 (1988).Leighton et al., *Diab. Med.* 6: Suppl. 2, A14 (1989).Ciraldi et al., *Diabetes* 39:149A (1990).Kreutter et al., *Diabetes* 39:121A (1990).Molina et al., *Diabetes* 39:260-65 (1990).Koopmans et al., *Diabetes* 39:101A (1990).Young et al., *Diabetes* 39:116A (1990).V. Marks, "Glucagon in the Diagnosis and Treatment of Hypoglycemia," Chapter 55 of *Handbook of Experimental Pharmacology*, vol. 66/II, P. J. Lefebvre (Ed.) (Springer-Verlag 1983).Young et al., *Am. J. Physiol.* 259:E457-61 (1990).Leighton et al., *Biochem. J.* 269:19-23 (1990).Yamaguchi et al. *Diabetes* 39:168-74 (1990).Leighton et al., *TIBS* 15:295-99 (1990).Ahren et al., *Int'l. Journal of Pancreatology* 6:1-15 (1990).Nishi et al., *Journal of Biological Chemistry* 265:4173-76.Clark, *Diab. Med.* 6:561-67 (1989).Cooper et al., *Diabetes* 1988, pp. 493-496, Larkins, Zimmet, and Chisholm (Eds.), (Elsevier Science Publishers B.V. 1989).Cooper et al., *Progress in Growth Factor Research* 1:99-105 (1989).Johnson et al., *New England Journal of Medicine* 321:513-18 (1989).*Primary Examiner*—Jeffrey E. Russel*Attorney, Agent, or Firm*—Lyon & Lyon[57] **ABSTRACT**

Compositions having amylin or an amylin agonist and a glucagon compound, particularly peptide compounds, for the control of glucose production in mammals are provided. The compositions are useful in the treatment of hypoglycemia, including acute hypoglycemic conditions such as those brought on by insulin overdose and the overuse of oral hypoglycemic agents.

24 Claims, 7 Drawing SheetsGLUCAGON 100 μ g AT 0hr, AMYLIN 100 μ g AT 6hr

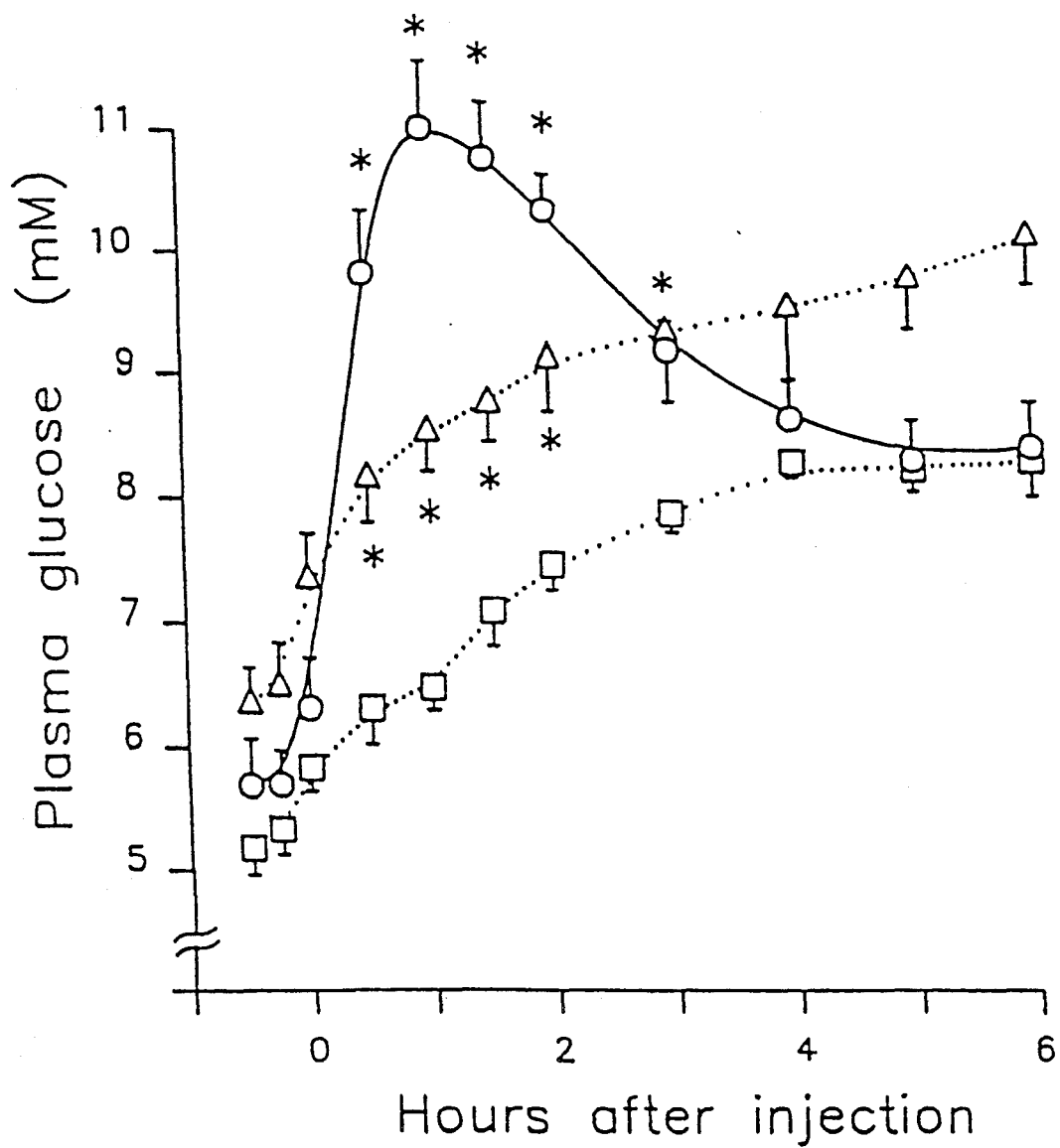
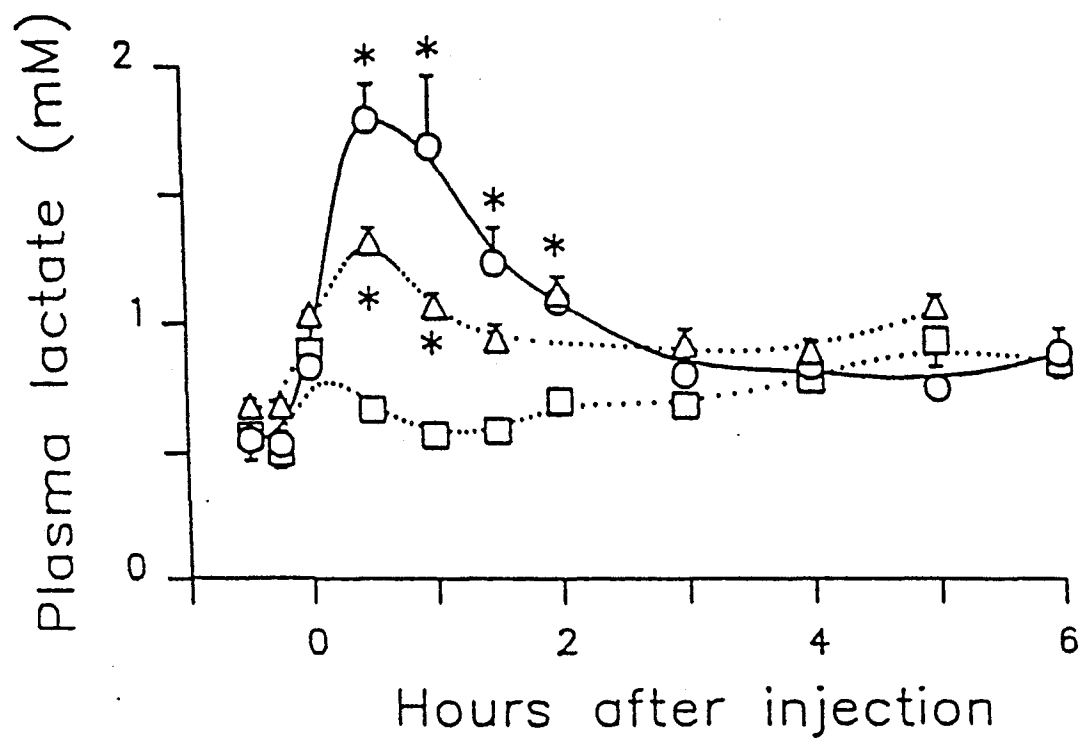


FIG. 1.

*FIG. 2.*

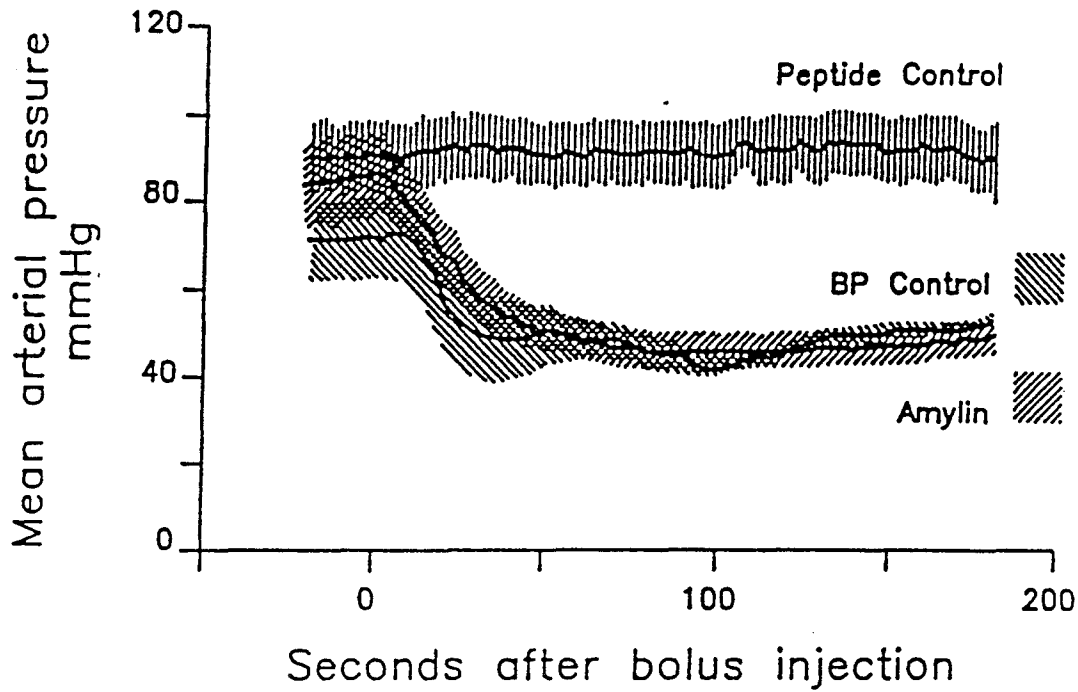


FIG. 3a.

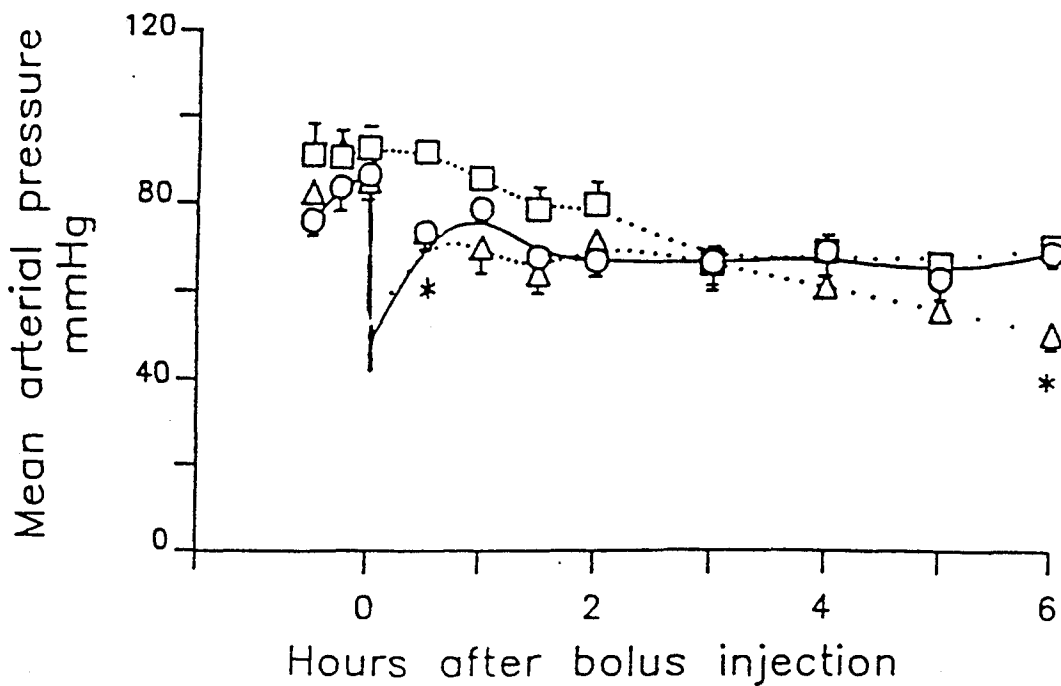


FIG. 3b.

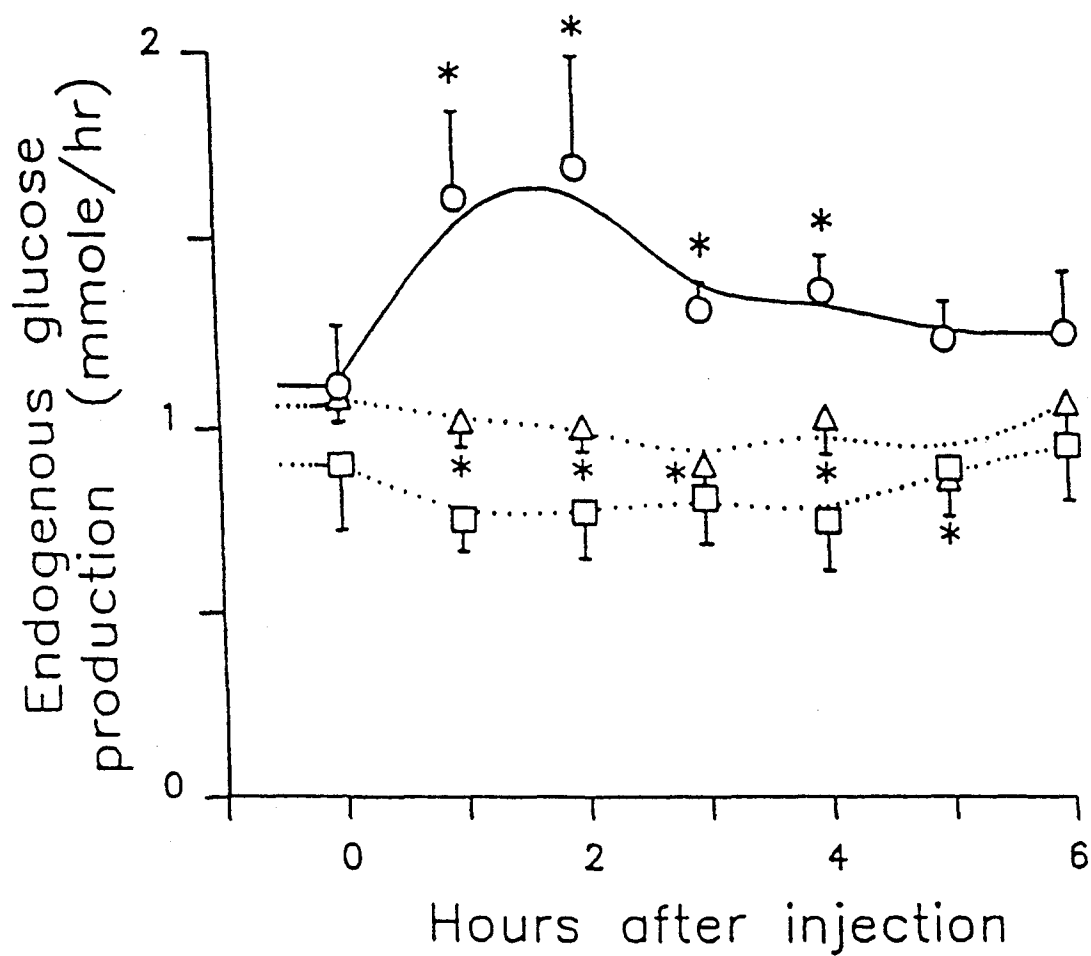


FIG. 4.

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.