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MIPR NO: 93MM3511

TITLE: DEVELOPMENT OF ULTRA LONG DURATION LOCAL ANESTHETIC AGENTS IN A RAT MODEL

PRINCIPAL INVESTIGATOR: Mark Kline, CPT, MC

CONTRACTING ORGANIZATION: Combat Anesthesia Research
Pain Management/Anesthesia
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REPORT DATE: February 24, 1994

TYPE OF REPORT: Annual Report

PREPARED FOR: U.S. Army Medical Research and
Materiel Command
Fort Detrick
Frederick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for public release;
distribution unlimited

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	24 February 1994	Annual Report (12/15/92-9/30/93)

4. TITLE AND SUBTITLE
Development of Ultra Long Duration Local Anesthetic Agents in a Rat Model

5. FUNDING NUMBERS
MIPR No.
93MM3511

6. AUTHOR(S)
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Combat Anesthesia Research
Pain Management/Anesthesia
Walter Reed Army Medical Center
Washington, DC 20307-5001

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Medical Research and Materiel Command
Fort Detrick
Frederick, Maryland 21702-5012

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

Lecithin-coated tetracaine microcrystals provide an ultra long duration local anesthetic effect without causing toxicity to surrounding tissues or nerves. Lecithin-coated buplvacaine microcrystals also appear to have an ultra long duration local anesthetic effect, although tissue toxicity remains to be evaluated.

14. SUBJECT TERMS
CIC3, Agents, Anesthesia, RA II

15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRAC
Unclassified	Unclassified	Unclassified	Unlimited

Memorandum for LTC Dean E. Calcagni, M.D.
Director, Combat Casualty Research Program
USAMRDC

Subject: Annual Report for Clinical Investigation Protocol 2056A "Development of Ultra Long Duration Local Anesthetic Agents in a Rat Model" (FY 93)

1. Progress: We have previously demonstrated that lecithin-coated tetracaine microcrystals provide an ultra long duration local anesthetic effect of 44 hours in the rat tail. We have also previously demonstrated that this formulation is not toxic to skin tissues when placed intradermally. This year we were able to demonstrate that lecithin-coated tetracaine microcrystals do not cause peripheral neurotoxicity when placed directly on the sciatic nerve. In addition, initial data indicate that this formulation is not toxic to the spinal cord.

Initial trials with lecithin-coated bupivacaine microcrystals indicate that this preparation also has an ultra long duration local anesthetic effect, producing a 43 hour block in the rat tail. Clinical trials of this preparation in a human model are scheduled to begin in Jan 94.

2. Summary: Lecithin-coated tetracaine microcrystals provide an ultra long duration local anesthetic effect without causing toxicity to surrounding tissues or nerves. Lecithin-coated bupivacaine microcrystals also appear to have an ultra long duration local anesthetic effect, although tissue toxicity remains to be evaluated.

3. Publications:

B.H. Boedeker, MD, M.D. Kline, MD, M.E. Mattix, DVM, D.G. Dunn, DVM, D.H. Haynes, PhD, W.L. Mondy, BS, P.Z. Kelly, RN, E.W. Lojeski, DO: Peripheral neurotoxicity of lecithin-coated tetracaine microcrystals. Anesthesiology **79**: A825, 1993

K.A. Burnham, MD, B.H. Boedeker, MD, M.D. Kline, MD, M.E. Mattix, DVM, J. Long, PhD, M.D. Calkins, MD, T. Rapacki, MD, D.H. Haynes, PhD: Spinal cord toxicity of lecithin-coated tetracaine microcrystals in the rat. Submission to ASRA.

M.D. Kline, MD, B.H. Boedeker, MD, K.A. Burnham, MD, M.D. Calkins, MD, D.H. Haynes, PhD: Lecithin-coated bupivacaine microcrystals produce ultra long duration local anesthesia. Submission to ASRA.

B.H. Boedeker, MD, E.W. Lojeski, DO, M.D. Kline, MD, D.H. Haynes, PhD: Ultra long duration local anesthesia produced by injection of lecithin-coated tetracaine microcrystals. Accepted for publication by The Journal of Clinical Pharmacology.

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