

## Addendum to APHIS FORM 7023 Concerning Category E Animals

For the 1997-1998 reporting period, 148 rats were used in experiments where the use of drugs could not be used to relieve pain or distress. These animals were all used in IACUC-approved nutrition experiments involving the trace element boron and its influence on the inflammatory response in bone joints. The purpose of the experiments was to study the relationship between boron, joint inflammation and the development of arthritis. The attached memo from Dr. Hunt explains that the use of analgesic, anesthetic, or tranquilizing drugs could mask the effects of dietary boron on the inflammatory response and interfere with the expression of arthritis. Dr. Hunt also was concerned that the use of drugs could impair the animals' ability to walk and interfere with normal eating and grooming habits.

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United States Department of Agriculture  
Research, Education, and Economics  
Agricultural Research Service

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SUBJECT: Justification for Lack of Anesthesia to Reduce Pain

TO: [REDACTED] (b)(7)(C)

FROM: [REDACTED] (b)(7)(C)

The rat represents a standard animal model for immune system function, for example, antibody production. The model develops antibodies to presented antigens very quickly so that the immune response can be followed over a period of 2-3 weeks. Mycobacterium butyricum is a well-characterized model antigen that mimics rheumatoid arthritis. There is strong indirect evidence that boron has a role in the prevention of rheumatoid arthritis which may be an autoimmune disease.

The importance of finding the cause of devastating human metabolic bone diseases such as rheumatoid arthritis is self evident. Because of the direct or strong indirect evidence that boron affects bone structure or the inflammatory response in bone joints, it is appropriate to characterize the complex interrelation between boron and the immune response in rats. Analgesic, anesthetic, or tranquilizing drugs were not used to minimize pain or distress because use of such agents would interfere with proper expression of the rheumatoid arthritis model or interfere with the ability of the animal to groom, walk, or obtain food and water.

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