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OMB APPROVED
0579-0036
Exp.: 10/31/2018

This report is required by law (7 U.S.C. 2143). Failure to report according to the regulations can result in an order to cease and desist and to be subject to penalties as provided for in Section 2150.

Interagency Report Control
No. 0180-DOA-AN

Fiscal Year 2017

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

1. REGISTRATION NUMBER
51-G-0001

2. HEADQUARTERS RESEARCH FACILITY (Name, address, and telephone number as registered with USDA, include ZIP Code)

Northeast Area Beltsville Location
10300 Baltimore Avenue
Building 209, BARC- East
BELTSVILLE, MD 20705

3. REPORTING FACILITY (List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets, if necessary.)

FACILITY LOCATIONS (Sites)

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY (Attach additional sheets, if necessary, or use APHIS FORM 7023A.)

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. (An explanation of the procedures producing pain or distress on these animals and the reasons such drugs were not used must be attached to this report.)	F. TOTAL NUMBER OF ANIMALS (Cols. C + D + E)
4. Dogs	0	0	0	0	0
5. Cats	14	38	0	0	38
6. Guinea Pigs	0	0	0	0	0
7. Hamsters	0	0	0	0	0
8. Rabbits	0	0	0	0	0
9. Non-human Primates	0	0	0	0	0
10. Sheep	0	25	0	0	25
11. Pigs	38	338	27	0	365
12. Other Farm Animals	24	220	4	0	224
13. Other Animals	429	7183	2481	2619	12283

ASSURANCE STATEMENTS

- Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
- Each principal investigator has considered alternatives to painful procedures.
- This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). A summary of all such exceptions is attached to this annual report. In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
- The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL
(Chief Executive Officer (C.E.O.) or Legally Responsible Institutional Official (L.O.))

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).

DATE SIGNED
01-FEB-2018

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Fiscal Year 2017

1. REGISTRATION NUMBER
51-G-0001

2. HEADQUARTERS RESEARCH FACILITY (Name, address, and telephone number as registered with USDA, include ZIP Code)

Northeast Area Beltsville Location

10300 Baltimore Avenue

Building 209 BARC- East

BELTSVILLE, MD 20705

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY (Attach additional sheets if necessary or use this form.)

[illegible]

ASSURANCE STATEMENTS

- 1.) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
- 2.) Each principal investigator has considered alternatives to painful procedures.
- 3.) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all such exceptions is attached to this annual report.** In addition to identifying the IACUC approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
- 4.) The attending veterinarian for this research facility has appropriate authority to ensure the provisions of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143).

DATE SIGNED _____

01-FEB-2018

Column E Explanation

This form is intended as an aid to completing the Column E explanation. Names, addresses, protocols, veterinary care programs and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

1. **Registration number: 51-G0001**
2. **Number of animals used under Column E conditions in this study. 1595**
3. **Species (common name) of animals used in this study. Chickens**
4. **Explain the procedure producing pain and/or distress, including reason(s) for species selected.**
 Chickens were inoculated with *Eimeria* spp. This enteric pathogen can cause gastrointestinal disease (coccidiosis) resulting in discomfort, suppressed appetite, and loose stools. Sometimes, inflammation in the gi tract can also predispose chickens to bacterial super-infections, which can likewise cause discomfort, reduced appetite, slowed growth, and fever.
5. **Provide a scientific justification for why pain and/or distress could not be relieved by use of anesthetics, analgesics or tranquilizers.**
 These experimental infections were induced in order to evaluate the efficacy of vaccines intended to prevent such infections for millions of birds. In poultry houses, coccidiosis is endemic and a frequent occurrence. The disease is not generally severe, although it does reduce productivity. In field conditions, birds would not generally have access to analgesics, anesthetics, or tranquilizers (the latter of which might do more harm than good). Administration of analgesics might influence the immune responses of chickens, undermining the scientific objective of determining efficacy in conditions resembling those in the poultry industry. Anesthetics would not seem applicable to ameliorating the sequelae of this condition. The actual oral administration of infection does not, as a rule, harm or hurt the animal.

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1. **Registration number:** 51-G0001
2. **Number of animals used under Column E conditions in this study:** 800
3. **Species (common name) of animals used in this study.** chickens
4. **Explain the procedure producing pain and/or distress, including reason(s) for species selected.**

Infection with *Clostridium perfringens*. Chickens were selected because the main objectives of the proposed studies are to investigate host-pathogen interactions using immunological and genomics technology to develop antibiotic-free alternative strategies to prevent poultry necrotic enteritis. These infections are species specific so another species could not be used.
5. **Provide a scientific justification for why pain and/or distress could not be relieved by use of anesthetics, analgesics or tranquilizers.**

The use of anesthetics or sedatives is not appropriate for this protocol for multiple reasons. Anesthetics and sedatives affect blood and tissue samples. The experiments are short term so euthanasia is typically done a few days after infection. Some of the trials rely on behavioral observations which can be altered by the use of the sedatives/anesthetics/analgesics. Also, some birds could become moribund and die acutely before the extent of their illness is recognized and treatment can be instituted.

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1. **Registration number: 51-G0001**
2. **Number of animals used under Column E conditions in this study. 80**
3. **Species (common name) of animals used in this study. chicken**
4. **Explain the procedure producing pain and/or distress, including reason(s) for species selected.**

Transient discomfort may have been experienced by the 80 experimental chickens that had been injected with a low dose of E. coli endotoxin to initiate a low-level proinflammatory response. The chicken is the test animal because our research is aimed at providing suggested solutions to the poultry industry for issues they contend with regarding stress and proinflammatory responses in production scenarios. This work is further targeted towards the need to generate these interventions that do not depend on the use of antimicrobial drugs.

5. **Provide a scientific justification for why pain and/or distress could not be relieved by use of anesthetics, analgesics or tranquilizers.**

Because the very nature of the work is geared towards understanding the mechanisms underlying gut-based proinflammatory responses in the chicken, the use of any anti-inflammatory steroids, antipyretic or analgesic drugs is contrary to the research need.

Column E Explanation

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1. **Registration number: 51-G0001**
2. **Number of animals used under Column E conditions in this study. 144**
3. **Species (common name) of animals used in this study. chicken**
4. **Explain the procedure producing pain and/or distress, including reason(s) for species selected.**

Chickens are infected with Eimeria, a protozoan parasite which can cause gastrointestinal problems, such as diarrhea, decrease in feed consumption, and decreased weight gain. The species of Eimeria that is investigated infects only chickens. In poultry farms Eimeria causes a significantly decreased growth rate and it is ubiquitous in nature and in production. To study the nature of Eimeria infection and test substances which ameliorate infection only chickens can be used in our studies.

5. **Provide a scientific justification for why pain and/or distress could not be relieved by use of anesthetics, analgesics or tranquilizers.**

The purpose of our studies is to determine the possible benefits of adding short chain fatty acids into poultry diets on the effects of Eimeria infection in chickens. Therefore, the animals cannot be treated for the coccidiosis because we could not determine the beneficial effects of adding the short chain fatty acids. Therefore clinical coccidiosis needs to develop which is then treated with experimental diets to test their possible effects.