Columbia University
in the City of New York
NEW YORK 27, N. Y.
DEPARTMENT OF CHEMISTRY
HAVEMEYER HALL



July 7, 1955

Lt. Colonel T. E. Huber
Research and Development Division
Office of the Surgeon General
Room 2528 Main Navy Building
18th and Constitution Avenues
Washington 25, D. C.

Dear Colonel Huber:

Enclosed you will find the Progress Report of our work under OSG Contract DA-49-007-MD-550, for the period from March 30, 1955 - June 30, 1955.

Very sincerely yours,

Robert R. Becker

Robert R. Becker (for Professor C. G. King)
Instructor in Chemistry

RRB EJS

Enc. - 4 copies

CC. - Colonel John R. Wood
Dr. H. F. Kraybill
Lt. Colonel Robert Ryer III
Committee on Government Aided Research,
Columgia University

Progress Report

# NUTRITIONAL AND BIOCHEMICAL EFFECTS OF RADIATION

By

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New York 27, N.Y.

Contract No. DA-49-007-MD-550

Period: March 30, 1955 to June 30, 1955

Ref. No.: CU-4-55-MD-550-Chem.

ABSTRACT

Results of the current experiment in which a partially irradiated diet (butterfat portion) is being fed indicate only slight differences in reproduction between the control group and the experimental groups. At this stage of the experiment, the per cent of young reared for the group on the irradiated diet is 67, as compared to 83 per cent for the control group and the group receiving the irradiated diet with vitamin E supplementation.

PROGRESS

I - Feeding experiments.

Experimental techniques and earlier results were reported in previous progress reports (1 and 3).

Tables I, II, and III summarize the most important results of the experiment to date. No great difference in the number of young born in the three groups is apparent when the fact that the vitamin E supplemented group has had a shorter breeding period is considered. There is, however, a difference in the per cent of young reared to 28 days of age. Groups 1 and 3 show 83 per cent as compared with 67 per cent in Group 2. In a previous experiment, a similar but smaller difference (85%, 78%) between the control and irradiated groups was noted in the first generation, but not in the second and third

generations. The difference noted in the current experiment is subject to variation as the experiment proceeds, since in Progress Report 3 the value for group 3 was 61%, and is now 83%. Therefore no great importance is attached to the results at this time.

II - Radiation-induced oxidation of specific nutrients.

Studies concerned with the radiation-induced oxidation of n-propyl-dihydro-nicotinamide are nearly completed, and the results will be given in the next report.

Table I

Control Group (1)

| | Cages | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Number of animals | 4 | 4 | 4 | 4 | 4 |
| Days on test, to and incl. 6/30/55 | 290 | 279 | 274 | 259 | 227 |
| Number of litters, to and incl. 6/30/55 | 4 | 7 | 8 | 6 | 6 |

Group 1

| | |
|---|---|
| Total number of litters | 31 |
| Number of young born | 216 |
| Number of young reared | 162 |
| Per cent of young reared | 83.0 (195 young born in 28 litters) |
| Number of mothers with: | |
| 1st litter | 10 |
| 2nd litter | 10 |
| 3rd litter | 8 |
| 4th litter | 3 |
| 5th litter | -- |
| Average weight of young reared | Males: 44 gms.<br>Females: 43 gms. |

Table II

Irradiated Group (2)

| | Cages | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Number of animals | 4 | 4 | 4 | 4 | 4 |
| Days on test, to and incl. 6/30/55 | 287 | 279 | 273 | 239 | 219 |
| Number of litters, to and incl. 6/30/55 | 8 | 6 | 7 | 5 | 5 |

Group 2

| | |
|---|---|
| Total number of litters | 32 |
| Number of young born | 217 |
| Number of young reared | 122 |
| Per cent of young reared | 67.0 (182 young born in 27 litters) |
| Number of mothers with: | |
| 1st litter | 10 |
| 2nd litter | 10 |
| 3rd litter | 7 |
| 4th litter | 4 |
| 5th litter | 1 |
| Average weight of young reared: | Males: 47 gms.<br>Females: 45 gms. |

Table III

Irradiated Group Vitamin E (3)

| | Cages | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3A | 4A | 5 |
| Number of animals | 4 | 4 | 4 | 4 | 4 |
| Days on test, to and incl. 6/30/55 | 286 | 276 | 85 | 56 | 227 |
| Number of litters, to and incl. 6/30/55 | 8 | 7 | not breeding as yet | | 5 |

Group 3*

| | |
|---|---|
| Total number of litters | 20 |
| Number of young born | 132 |
| Number of young reared | 95 |
| Per cent of young reared | 83.3 (114 young born in 17 litters) |
| Number of mothers with: | |
| 1st litter | 6 |
| 2nd litter | 6 |
| 3rd litter | 5 |
| 4th litter | 3 |
| 5th litter | -- |
| Average weight of young reared: | Males: 45 gms.<br>Females: 43 gms. |

* - Only cages 1, 2, 5.

TEH:dk

11 July 1955

Dr. Charles G. King
Columbia University
Department of Chemistry
Havemeyer Hall
New York 27, New York

Dear Doctor King:

Your Progress Report for the period March 30, 1955 to June 30, 1955, entitled "Nutritional and Biochemical Effects of Radiation," under contract No. DA-49-007-MD-550, has been received.

Let me take this opportunity to thank you for this most interesting progress report.

Sincerely,

TYRON E. HUBER
Lt. Colonel, MC
Research and
Development Division