

Journal of Andrology, Vol 7, Issue 1 32-41, Copyright © 1986 by The American Society of Andrology

## JOURNAL ARTICLE

# Dose and time relationships in the endocrine response of the irradiated adult rat testis

J. I. Delic, J. H. Hendry, I. D. Morris and S. M. Shalet

The dose- and time-dependent responses for the interstitial and tubular compartments in irradiated adult rat testes are described. Leydig cell dysfunction, as indicated by increased serum LH (to a maximum of 385% of control after 5 Gy) and decreased serum T (to a minimum of 30% of control after 10 Gy), was observed at 8 weeks postirradiation. Subsequent recovery of Leydig cell function was then observed, so that after 9 months serum T was normal but LH was still marginally elevated. The dysfunction, with a threshold of about 4 to 5 Gy, was associated with a loss of Leydig cells from the testis. Spermatogenic damage was observed; after doses of 3 Gy and above a marked dose-response was recorded as assessed by counts of tubule cross sections exhibiting spermatogenesis. Reduced serum levels of androgen binding protein indicated Sertoli cell dysfunction at 8 weeks after 3 Gy and above, with values of less than one half of those seen in the controls. Serum FSH also was elevated to between 150% and 200% of control, and after 9 months closely reflected androgen binding protein changes. Unlike the Leydig cell, no recovery with time was observed for this aspect of Sertoli cell function.

This article has been cited by other articles:



### TOXICOLOGICAL SCIENCES

[HOME](#)

R. Sivakumar, P. B. Sivaraman, N. Mohan-Babu, I. M. Jainul-Abideen, P. Kalliyappan, and K. Balasubramanian  
Radiation Exposure Impairs Luteinizing Hormone Signal Transduction and Steroidogenesis in Cultured Human Leydig Cells  
Toxicol. Sci., June 1, 2006; 91(2): 550 - 556.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### Radiation Protection Dosimetry

[HOME](#)

G. Grafstrom, B.-A. Jonsson, A. M. El Hassan, J. Tennvall, and S.-E. Strand  
Rat testis as a radiobiological in vivo model for radionuclides  
Radiat Prot Dosimetry, April 1, 2006; 118(1): 32 - 42.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

### This Article

- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

### Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)

### Citing Articles

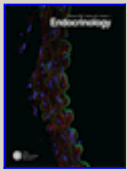
- ▶ [Citing Articles via HighWire](#)
- ▶ [Citing Articles via Google Scholar](#)

### Google Scholar

- ▶ [Articles by Delic, J. I.](#)
- ▶ [Articles by Shalet, S. M.](#)
- ▶ [Search for Related Content](#)

### PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Delic, J. I.](#)
- ▶ [Articles by Shalet, S. M.](#)



## Endocrinology

▶ HOME

K. L. Porter, G. Shetty, and M. L. Meistrich  
Testicular Edema Is Associated with Spermatogonial Arrest in  
Irradiated Rats

Endocrinology, March 1, 2006; 147(3): 1297 - 1305.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



## Endocrinology

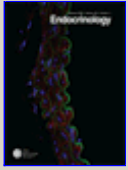
▶ HOME

G. Shetty, C. C. Y. Weng, S. J. Meachem, O. U. Bolden-Tiller, Z. Zhang, P.  
Pakarinen, I. Huhtaniemi, and M. L. Meistrich

Both Testosterone and Follicle-Stimulating Hormone Independently  
Inhibit Spermatogonial Differentiation in Irradiated Rats

Endocrinology, January 1, 2006; 147(1): 472 - 482.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



## Endocrinology

▶ HOME

G. Shetty, C. C. Y. Weng, O. U. Bolden-Tiller, I. Huhtaniemi, D. J.  
Handelsman, and M. L. Meistrich

Effects of Medroxyprogesterone and Estradiol on the Recovery of  
Spermatogenesis in Irradiated Rats

Endocrinology, October 1, 2004; 145(10): 4461 - 4469.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

[HOME](#) [HELP](#) [FEEDBACK](#) [SUBSCRIPTIONS](#) [ARCHIVE](#) [SEARCH](#) [TABLE OF CONTENTS](#)

[Copyright © 1986 by The American Society of Andrology.](#)