

## Radiation Protection Dosimetry

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### Determination of human absorbed dose of $^{67}\text{Ga}$ -DTPA-ACTH based on distribution data in rats

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#### Abstract

The absorbed radiation dose to human organs has been estimated, following intravenous administration of  $^{67}\text{Ga}$ -labelled adrenocorticotrophic hormone (ACTH) using distribution data from injected normal rats. Four rats were sacrificed at exact time intervals and the percentage of injected dose per gram of each organ was measured by direct counting from rat data. The Medical Internal Radiation Dose formulation was applied to extrapolate from rat to human and to project the absorbed radiation dose for various organs in a human. From rat data, it is estimated that a  $1.8 \times 10^6$  MBq injection of  $^{67}\text{Ga}$ -diethylenetriaminepentaacetic acid-ACTH into a human might result in an estimated absorbed dose of 2.22 mGy to the whole body; the highest absorbed dose was in the bladder wall with 82.1 mGy and the organs that received the next highest doses were the lungs 31.8, liver 22.6 and spleen 8.22 mGy. These results suggest that it should be possible to perform early imaging of the lung anomalies. © The Author 2009. Published by Oxford University Press. All rights reserved.

#### Reaxys Database Information

#### Indexed Keywords

**EMTREE drug terms:** corticotropin gallium pentetate  $^{67}\text{Ga}$ ; radiopharmaceutical agent; unclassified drug

**EMTREE medical terms:** animal experiment; animal tissue; article; bladder wall; controlled study; dosimetry; drug distribution; female; liver; lung; lung scintiscanning; nonhuman; radiation absorption; radiation detector; rat; spleen; tissue distribution

**MeSH:** Absorption; Adrenocorticotrophic Hormone; Animals; Body Weight; Chelating Agents; Female; Gallium Radioisotopes; Hormones; Humans; Organ Size; Pentetic Acid; Radiation Dosage; Rats; Tissue Distribution  
*Medline is the source for the MeSH terms of this document.*

**Chemicals and CAS Registry Numbers:** Adrenocorticotrophic Hormone, 9002-60-2; Chelating Agents; Gallium Radioisotopes; Hormones; Pentetic Acid, 77-83-6

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