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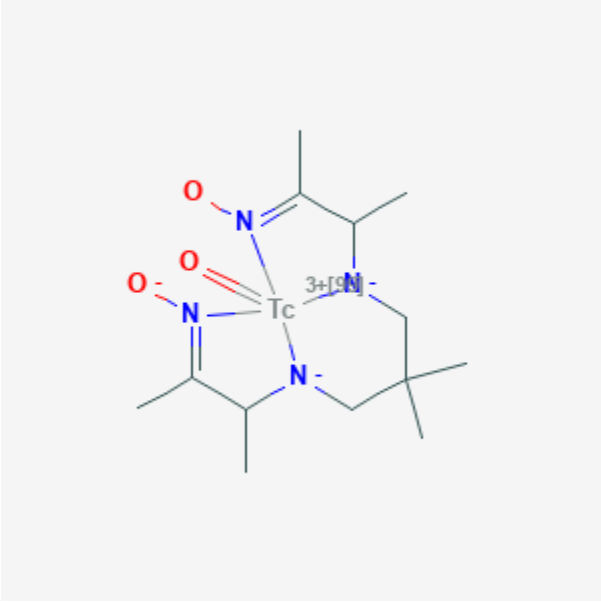
Technetium Tc 99m Exametazime

Revised: June 30, 2019.

CASRN: 100504-35-6



Drug Levels and Effects

Summary of Use during Lactation

Information in this record refers to the use of technetium Tc 99m exametazime (Tc 99m-hexamethylpropyleneamine oxime; Tc 99m HPAO; Tc 99m HMPAO) as a diagnostic agent. Breastfeeding need not be interrupted after administration of technetium Tc 99m exametazime in doses up to 500 MBq (15 mCi) to a nursing mother.[1][2][3] However, to follow the principle of keeping exposure "as low as reasonably achievable", some experts recommend nursing the infant just before administration of the radiopharmaceutical and interrupting breastfeeding for 3 to 6 hours after the dose, then expressing the milk completely once and discarding it. If the mother has expressed and saved milk prior to the examination, she can feed it to the infant during the period of nursing interruption.[3][4][5] Mothers need not refrain from close contact with their infants after usual clinical doses.[1]

Disclaimer: Information presented in this database is not meant as a substitute for professional judgment. You should consult your healthcare provider for breastfeeding advice related to your particular situation. The U.S. government does not warrant or assume any liability or responsibility for the accuracy or completeness of the information on this Site .

For white blood cells labeled with technetium Tc 99m exametazime 180 to 400 MBq, the International Atomic Energy Agency recommends that breastfeeding should be interrupted for 12 hours.[5]

Mothers concerned about the level of radioactivity in their milk could ask to have it tested at a nuclear medicine facility at their hospital. When the radioactivity is at a safe level she may resume breastfeeding. A method for measuring milk radioactivity and determining the time when a mother can safely resume breastfeeding has been published.[6]

For nursing mothers who work with Tc 99m substances in their workplace, there is no need to take any precautions other than those appropriate for general radiation protection.[7]

Drug Levels

Tc 99m is a gamma emitter with a principal photon energy of 140.5 keV and a physical half-life of 6.024 hours.[8] The effective half-life of technetium Tc 99m exametazime leukocytes is 7.5 hours, and 0.11% of the administered dose appears in breastmilk.[9]

Effects in Breastfed Infants

Relevant published information was not found as of the revision date.

Effects on Lactation and Breastmilk

Relevant published information was not found as of the revision date.

References

1. Mountford PJ, O'Doherty MJ. Exposure of critical groups to nuclear medicine patients. Appl Radiat Isot. 1999;50:89-111. PubMed PMID: 10028630.
2. Marshall DSC, Newberry NR, Ryan PJ. Measurement of the secretion of technetium-99m hexamethylpropylene amine oxime into breast milk. Eur J Nucl Med. 1996;23:1634-5. PubMed PMID: 8929318.
3. National Radiation Protection Board (UK). Administration of radioactive substances advisory committee. Notes for guidance on the clinical administration of radiopharmaceuticals and use of sealed radioactive sources. 2019. Available at: https://assets.publishing.service.gov.uk/government/.../file/.../ARSAC_NfG_2019.pdf
4. Mountford PJ, Coakley AJ. A review of the secretion of radioactivity in human breast milk: data, quantitative analysis and recommendations. Nucl Med Commun. 1989;10:15-27. PubMed PMID: 2645546.
5. International Atomic Energy Agency. Radiation Protection and Safety in Medical Uses of Ionizing Radiation, IAEA Safety Standards Series No. SSG-46, IAEA, Vienna. 2018. Available at: https://www.iaea.org/publications/11102/radiation-protection-and-safety-in-medical-uses-of-ionizing-radiation
6. Stabin MG, Breitz HB. Breast milk excretion of radiopharmaceuticals: mechanisms, findings, and radiation dosimetry. J Nucl Med. 2000;41:863-73. PubMed PMID: 10809203.
7. Almen A, Mattsson S. Radiological protection of foetuses and breast-fed children of occupationally exposed women in nuclear medicine - Challenges for hospitals. Phys Med. 2017;43:172-7. PubMed PMID: 28882410.
8. Howe DB, Beardsley M, Bakhsh S. Appendix U. Model procedure for release of patients or human research subjects administered radioactive materials. In, NUREG-1556. Consolidated guidance about materials licenses. Program-specific guidance about medical use licenses. Final report. U.S. Nuclear Regulatory Commission Office of Nuclear Material Safety and Safeguards. 2008;9, Rev. 2. Available at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/v9/r2/

9. Leide-Svegborn S, Ahlgren L, Johansson L et al. Excretion of radionuclides in human breast milk after nuclear medicine examinations. Biokinetic and dosimetric data and recommendations on breastfeeding interruption. Eur J Nucl Med Mol Imaging. 2016;43:808-21. PubMed PMID: 26732471.

Substance Identification

Substance Name

Technetium Tc 99m Exametazime

CAS Registry Number

100504-35-6

Drug Class

Breast Feeding

Lactation

Radiopharmaceuticals

Technetium Compounds

Diagnostic Agents