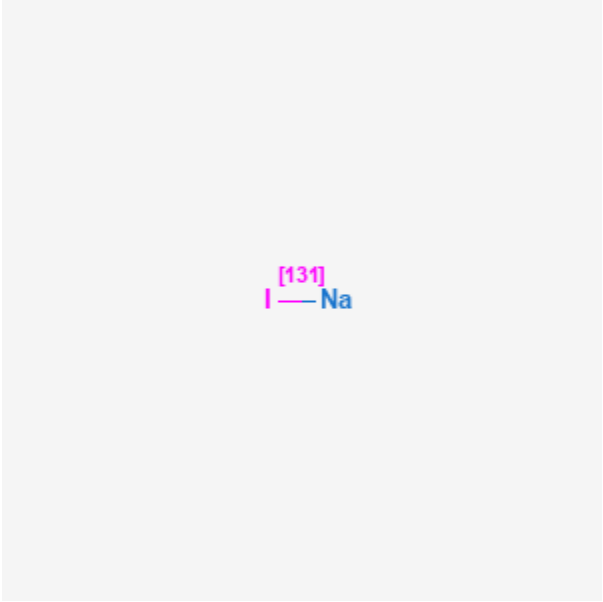
U.S. National Library of Medicine
National Center for Biotechnology Information

NLM Citation: Drugs and Lactation Database (LactMed®) [Internet]. Bethesda (MD): National Institute of Child Health and Human Development; 2006-. Sodium Iodide I 131. [Updated 2023 Oct 15].
Bookshelf URL: https://www.ncbi.nlm.nih.gov/books/

Sodium Iodide I 131

Revised: October 15, 2023.

CASRN: 7790-26-3



Drug Levels and Effects

Summary of Use during Lactation

Information in this record refers to the use of sodium iodide I 131 as a diagnostic and therapeutic agent. The use of I 131 is contraindicated during lactation. Breastfeeding should be discontinued permanently for this child after administration of sodium iodide I 131 in a dose of 0.01 MBq (0.004 mCi) or greater to a nursing mother.[1-7] Ceasing breastfeeding 4 to 6 weeks before receiving a therapeutic dose of sodium iodide I 131 is recommended to reduce the radiation dose to the breasts and the risk of milk leakage that can contaminate clothing with radioactive iodine.[8-10] The American Thyroid Association recommends using I 123 or Tc99m pertechnetate scans for diagnosis of hyperthyroidism in nursing mothers.[1]

Parents should refrain from close contact with their infants after therapeutic iodine 131 administration. The exact duration depends on the dose administered, condition being treated, and source of the recommendation.[11,12] Recommended times range from 15 to 27 days after hyperthyroidism treatment, 16 to 24 days after ablation of thyroid cancer, and 4 to 5 days after follow-up therapy of thyroid ablation therapy.[12]

Nursing mothers should not work with substances containing I 131 in their workplace.[13]

Drug Levels

I 131 is a beta and high-energy gamma emitter with a main gamma emission energy of 364 keV and a physical half-life of 8.04 days.[10] Estimates of the average effective half-life of sodium iodide I 131 vary from 9.2 hours to 14 hours, and it may be as long as 48 hours in some patients. Iodide is actively secreted into breastmilk by the NaI symporter, which is stimulated by lactation, and actively taken up by the mother's and infant's thyroid glands.[14] About 31% (range 25% to 48%) of administered radioactivity is excreted into breastmilk after administration of sodium iodide I 131.[15,16]

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.

Alternate Drugs to Consider

(Hyperthyroidism Diagnosis) Sodium Pertechnetate Tc 99m, Sodium Iodide I 123; (Hyperthyroidism Treatment) Propylthiouracil, Methimazole

References

1. Alexander EK, Pearce EN, Brent GA, et al. 2016 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and the Postpartum. Thyroid 2017;27:315-89. PubMed PMID: 28056690.
2. Mountford PJ, O'Doherty MJ. Exposure of critical groups to nuclear medicine patients. Appl Radiat Isot 1999;50:89-111. PubMed PMID: 10028630.
3. Silberstein EB, Alavi A, Balon HR, et al. The SNMMI practice guideline for therapy of thyroid disease with 131I 3.0. J Nucl Med 2012;53:1633-51. PubMed PMID: 22787108.
4. Mattsson S, Johansson L, Leide Svegborn S, et al. Radiation dose to patients from radiopharmaceuticals: A compendium of current information related to frequently used substances. ICRP Publication 128. Annex D. Recommendations on breast-feeding interruptions. Ann ICRP 2015;44 (2 Suppl):7-321.
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. ARSAC notes for guidance: Good clinical practice in nuclear medicine. Notes for guidance on the clinical administration of radiopharmaceuticals and use of sealed radioactive sources. 2020. Available at: https://www.gov.uk/government/publications/arsac-notes-for-guidance
7. Mitchell KB, Fleming MM, Anderson PO, Giesbrandt JG. ABM Clinical Protocol #30: Radiology and nuclear medicine studies in lactating women. Breastfeed Med 2019;14:290-4. PubMed PMID: 31107104.
8. Balon HR, Silberstein EB, Meier DA, et al. Society of Nuclear Medicine Procedure Guideline for Thyroid Uptake Measurement. 2006.

9. De Groot L, Abalovich M, Alexander EK, et al. Management of thyroid dysfunction during pregnancy and postpartum: An Endocrine Society clinical practice guideline. J Clin Endocrinol Metab 2012;97:2543-65. PubMed PMID: 22869843.
10. Dilsizian V, Metter D, Palestro C, Zanzonico P. Advisory Committee on Medical Uses of Isotopes (ACMUI) Sub-Committee on Nursing Mother Guidelines for the Medical Administration of Radioactive Material. Final report submitted: January 31, 2019. 2019. Available at: https://www.nrc.gov/docs/ML1903/ML19038A498.pdf
11. Siegel JA, Marcus CS, Stabin MG. Licensee over-reliance on conservatisms in NRC guidance regarding the release of patients treated with 131I. Health Phys 2007;93:667-77. PubMed PMID: 17993847.
12. Anon. ICRP Publication 94. Release of patients after therapy with unsealed radionuclides. Ann ICRP 2004;34:v-vi, 1-79. PubMed PMID: 15571759.
13. Almén 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.
14. Ramesh S, Basu S. Differential physiological sodium iodide symporter expression in lactating breasts. J Assoc Physicians India 2022;70:11-2.
15. 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.
16. Leide-Svegborn S, Ahlgren L, Johansson L, Mattsson S. 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

Sodium Iodide I 131

CAS Registry Number

7790-26-3

Drug Class

Breast Feeding

Lactation

Milk, Human

Radiopharmaceuticals

Iodine Radioisotopes