

Format:

Abstract ▾

Send to ▾

Full text links

Save items

Add to Favorites ▾

[Thyroid. 2017 Dec;27\(12\):1574-1581. doi: 10.1089/thy.2017.0158.](#)

Urinary Iodine, Perchlorate, and Thiocyanate Concentrations in U.S. Lactating Women.

Lee SY¹, McCarthy AM², Stohl H³, Ibrahim S⁴, Jeong C¹, Braverman LE¹, Ma W⁵, He X¹, Mestman JH⁶, Schuller KE¹, Jahreis KA¹, Pearce EN¹, Leung AM^{7,8}.

Author information

- 1 1 Section of Endocrinology, Diabetes, and Nutrition, Boston University School of Medicine , Boston, Massachusetts.
- 2 2 Department of Obstetrics and Gynecology, Kaiser Permanente Northern California , Walnut Creek, California.
- 3 3 Department of Obstetrics and Gynecology, UCLA David Geffen School of Medicine , Los Angeles, California.
- 4 4 Department of Obstetrics and Gynecology, Indiana University School of Medicine , Indianapolis, Indiana.
- 5 5 Wellesley College , Wellesley, Massachusetts.
- 6 6 Department of Medicine and Department of Obstetrics and Gynecology, Keck School of Medicine of University of Southern California , Los Angeles, California.
- 7 7 Division of Endocrinology, Diabetes, and Metabolism, UCLA David Geffen School of Medicine , Los Angeles, California.
- 8 8 Division of Endocrinology, Department of Medicine, VA Greater Los Angeles Healthcare System , Los Angeles, California.

Abstract

BACKGROUND: Iodine is an essential micronutrient for thyroid hormone production. Adequate iodine intake and normal thyroid function are important during early development, and breastfed infants rely on maternal iodine excreted in breast milk for their iodine nutrition. The proportion of women in the United States of childbearing age with urinary iodine concentration (UIC) <50 µg/L has been increasing, and a subset of lactating women may have inadequate iodine intake. UIC may also be influenced by environmental exposure to perchlorate and thiocyanate, competitive inhibitors of iodine transport into thyroid, and lactating mammary glands. Data regarding UIC in U.S. lactating women are limited. To adequately assess the iodine sufficiency of lactating women and potential associations with environmental perchlorate and thiocyanate exposure, we conducted a multicenter, cross-sectional study of urinary iodine, perchlorate, and thiocyanate concentrations in healthy U.S. lactating women.

METHODS: Lactating women ≥18 years of age were recruited from three U.S. geographic regions: California, Massachusetts, and Ohio/Illinois from November 2008 to June 2016. Demographic information and multivitamin supplements use were obtained. Iodine, perchlorate, and thiocyanate levels were measured from spot urine samples. Correlations between urinary iodine, perchlorate, and thiocyanate levels were determined

Similar articles

- [Environmental perchlorate and thiocyanate expo \[Thyroid. 2012\]](#)
- [Iodine status and thyroid f \[J Clin Endocrinol Metab. 2011\]](#)
- [The association between r \[J Clin Endocrinol Metab. 2014\]](#)
- [Review Iodine nutrition status in lactating mothers \[Thyroid. 2015\]](#)
- [Review Iodine deficiency, pollutant chem \[Pediatrics. 2014\]](#)

[See reviews...](#)[See all...](#)

Cited by 1 PubMed Central article

- [Exposure to Perchlorate in front Endocrinol \(Lausanne\). 2...](#)

Related information

- [PubChem Compound \(MeSH Keyword\)](#)

References for this PMC Article

Cited in PMC

Recent Activity

- [Turn Off](#) [Clear](#)
- Urinary Iodine, Perchlorate,

using Spearman's rank correlation. Multivariable regression models were used to assess predictors of urinary iodine, perchlorate, and thiocyanate levels, and UIC <100 µg/L.

RESULTS: A total of 376 subjects (≥ 125 from each geographic region) were included in the final analyses [mean (SD) age 31.1 (5.6) years, 37% white, 31% black, and 11% Hispanic]. Seventy-seven percent used multivitamin supplements, 5% reported active cigarette smoking, and 45% were exclusively breastfeeding. Median urinary iodine, perchlorate, and thiocyanate concentrations were 143 µg/L, 3.1 µg/L, and 514 µg/L, respectively. One-third of women had UIC <100 µg/L. Spot urinary iodine, perchlorate, and thiocyanate levels all significantly positively correlated to each other. No significant predictors of UIC, UIC <100 µg/L, or urinary perchlorate levels were identified. Smoking, race/ethnicity, and marital status were significant predictors of urinary thiocyanate levels.

CONCLUSION: Lactating women in three U.S. geographic regions are iodine sufficient with an overall median UIC of 143 µg/L. Given ubiquitous exposure to perchlorate and thiocyanate, adequate iodine nutrition should be emphasized, along with consideration to decrease these exposures in lactating women to protect developing infants.

KEYWORDS: iodine; iodine in breastfeeding; iodine nutrition; lactation; perchlorate; thiocyanate

PMID: 29130403 PMCID: [PMC5734160](#) [Available on 2018-12-01] DOI: [10.1089/thy.2017.0158](#)

[Indexed for MEDLINE]



Publication types, MeSH terms, Substances, Grant support +

LinkOut - more resources +

You are here: NCBI > Literature > PubMed

[Support Center](#)

GETTING STARTED	RESOURCES	POPULAR	FEATURED	NCBI INFORMATION
NCBI Education	Chemicals & Bioassays	PubMed	Genetic Testing Registry	About NCBI
NCBI Help Manual	Data & Software	Bookshelf	GenBank	Research at NCBI
NCBI Handbook	DNA & RNA	PubMed Central	Reference Sequences	NCBI News & Blog
Training & Tutorials	Domains & Structures	BLAST	Gene Expression Omnibus	NCBI FTP Site
Submit Data	Genes & Expression	Nucleotide	Genome Data Viewer	NCBI on Facebook
	Genetics & Medicine	Genome	Human Genome	NCBI on Twitter
	Genomes & Maps	SNP	Mouse Genome	NCBI on YouTube
	Homology	Gene	Influenza Virus	Privacy Policy
	Literature	Protein	Primer-BLAST	
	Proteins	PubChem	Sequence Read Archive	
	Sequence Analysis			
	Taxonomy			
	Variation			

National Center for Biotechnology Information, U.S. National Library of Medicine
8600 Rockville Pike, Bethesda MD, 20894 USA

- and Thiocyanate PubMed
- Environmental Perchlorate and Thiocyanate Exposures PubMed
- Environmental perchlorate and thiocyanate expo PubMed
- Effects of Inorganic Iodine Therapy Administered to PubMed
- Effects of Inorganic Iodine Therapy Administered PubMed

[See more...](#)

[Policies and Guidelines](#) | [Contact](#)

