Iodine Content of Prenatal Multivitamins in the United States

TO THE EDITOR: Normal thyroid function in fetuses and breast-fed infants, which is dependent on sufficient maternal dietary intake of iodine, is crucial for normal neurocognitive development.[1] Children of mothers with severe iodine deficiency may have cretinism. Iodine deficiency affects more than 2.2 billion persons (38% of the world's population) and is the leading cause of preventable mental retardation worldwide.[2] Even mild iodine deficiency may have adverse effects on the cognitive function of children.[1]

National surveys including the first and third National Health and Nutrition Examination Surveys (NHANES I and III) and NHANES 2001–2002 have reported a decrease of approximately 50% in adult urinary iodine values since the 1970s in the United States. In the subgroup of women of childbearing age, the median urinary iodine value decreased from 294 to 128 μg per liter. The most recent NHANES survey (2003–2004) reported that 37.2% of this subgroup of women had urinary iodine values below 100 μg per liter, which suggests mild iodine deficiency.[3]

The Institute of Medicine recommends a daily iodine intake of 220 μg during pregnancy and 290 μg during lactation; the World Health Organization recommends 250 μg of iodine daily for pregnant and lactating women. The American Thyroid Association has recommended that women receive prenatal vitamins containing 150 μg of iodine daily during pregnancy and lactation.[4] However, the iodine content of prenatal multivitamins is not mandated in the United States.

Using the Internet, we identified 127 nonprescription and 96 prescription prenatal multivitamins currently marketed in the United States. Of these multivitamins, 114 (87 nonprescription and 27 prescription) contained iodine; according to the product labeling, 101 (89%) contained 150 μg or more of iodine per daily dose. The iodine was in the form of kelp (in 42 multivitamins), potassium iodide (in 67), or another ingredient (in 5).

We measured the iodine content in 60 randomly selected iodine-containing prenatal multivitamins (1 to 2 tablets per bottle, each from a single lot) and compared the results with the values on their labels (Table 1). The mean (±SE) level of measured iodine per daily dose in 35 potassium iodide–containing vitamins was 119.0±13.6 μg.

Table 1. Iodine Content in Prenatal Multivitamins.

Multivitamins Derived from Potassium Iodide (N=35)		Multivitamins Derived from Kelp (N=25)	
Iodine Value on Label	Measured Iodine	Iodine Value on Label	Measured Iodine
μg/daily dose		*μg/daily dose*	
Nonprescription		Nonprescription	
25	11	75	55
50	49	150	33
75	15	150	36
150	17	150	40
150	31	150	55
150	36	150	67
150	91	150	70
150	95	150	70
150	100	150	75
150	107	150	115
150	114	150	115
150	152	150	132
150	228	150	144
300	213	150	155
300	236	150	180
300	395	150	214
Prescription		150	240
150	26	150	270
150	46	180	198
150	49	200	115
150	56	225	110
150	87	225	227
150	91	225	229
150	103	226	610
150	106	300	46
150	116		
150	117		
150	117		
150	129		
150	144		
150	144		
150	162		
150	167		
150	220		
175	186		
200	205		

Potassium iodide contains 76% iodide. Thus, the measured iodine content was approximately equivalent to 76% of the total potassium iodide content. The measured iodine in 25 brands containing kelp was 33 to 610 μg per daily dose. Thirteen brands contained levels of iodine that were discordant by 50% or more with the values on their labels, including 10 brands with iodine values that were lower by 50% or more. Variations in the iodine content of kelp have been reported previously.[5]

Manufacturers of prenatal multivitamins in the United States should be encouraged to use only potassium iodide, to maintain consistency in labeling, and to ensure that these vitamins contain 150 μg of supplemental daily iodine by including at least 197 μg of potassium iodide per daily dose, as recommended by the American Thyroid Association.

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