Association between Total Dairy and Individual Dairy Foods and Iodine Status in the U.S. Population

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Objectives: The objective of this study was to determine the association between the consumption of dairy foods with urinary iodine concentration (UIC) and iodine deficiency risk in a nationally representative sample.

Methods: 24-hour dietary recall data and laboratory data for UIC (μg/L) from subjects 2 + years old participating in National Health and Nutrition Examination Surveys (NHANES) 2001–2018 were used (N = 26,838). Data were adjusted for demographic factors for analyses stratified by age/race-ethnicity. Significant associations between iodine status and dairy intake quintile (with non-consumers as the first group) were assessed at $P < 0.05$. Logistic regression was used to assess the odds ratio (95th percentile confidence intervals) of being below the iodine insufficient level (UIC $< 100\ \mu$g/L) and the severely iodine deficient level (UIC $< 20\ \mu$g/L) for dairy consumption groups with non-consumers as the reference group by age groups.

Results: Mean intakes of total dairy, milk, cheese and yogurt were 2.21, 1.58, 0.78 and 0.46 cup eq respectively for those 2–8 y; 2.17, 1.38, 1.11 and 0.48 cup eq respectively for those 9–18 y; and 1.70, 0.95, 1.09 and 0.57 cup eq respectively for those 19 + y.

Intake of total dairy and milk were positively associated with UIC among those 2- 8 y ($\beta = 27.8 \pm 8.8$ and $42.4 \pm 8.4\ \mu$g/L/cup eq, respectively) and 9–18 y ($\beta = 15.9 \pm 2.7$ and $30.4 \pm 5.0\ \mu$g/L/cup eq, respectively) but not associated among those 19 + y. Intakes of cheese and yogurt were not associated with UIC among any age group.

Total dairy intake was inversely associated with odds ratio [OR (95th confidence intervals)] of being iodine deficient or severely deficient among those 2–8 y [0.70 (0.61, 0.82) and 0.53 (0.28, 0.99), respectively], 9–18 y [0.79 (0.73, 0.85) and 0.70 (0.50, 0.98)], respectively], and 19 + y [0.80 (0.77, 0.83) and 0.74 (0.65, 0.84), respectively].

Milk intake was inversely associated with odds ratio of being iodine deficient or severely deficient among those 2–8 y [0.67 (0.59, 0.77) and 0.49 (0.31, 0.79), respectively], 9–18 y [0.76 (0.71, 0.82) and 0.68 (0.50, 0.91)], respectively], and 19 + y [0.84 (0.80, 0.87) and 0.77 (0.66, 0.89), respectively].

Conclusions: The results indicate that dairy foods are beneficially associated with UIC population iodine sufficiency.