

# How to control milk iodine concentration

P. Lacasse S. I. Borucki Castro, and R. Berthiaume

Agriculture and Agri-Food Canada, 2000 College Street, Sherbrooke, QC, J1M 0C8 Canada,  
Email: [pierre.lacasse@agr.gc.ca](mailto:pierre.lacasse@agr.gc.ca)

A survey was conducted to determine concentration of iodine in bulk-tank milk and its relationship with feeding and management practices. Milk samples were collected and a questionnaire was completed by 501 farms across all provinces of Canada. A subset of 60 farms with either high or low concentration of iodine was chosen for further investigation. This study has indicated that there is a direct relationship between the quantity of iodine fed and the concentration of iodine in milk. Most of the dietary iodine is provided via mineral supplements whereas forages supplied less than 20 % of iodine requirements in the average lactating cow diet. Therefore, variations in the iodine content of forages are unlikely to cause iodine overfeeding. This survey also indicated that teat dipping (pre and postmilking with iodine based solutions) also affects milk iodine. The method of application appears to be most important with iodine concentration increasing from dip cup to hand spraying and even further with in line spraying. Two experiments were conducted to evaluate more precisely the findings of this survey. A first study has determined the effects of different iodine levels in lactating cow diets and different post dip practices on the concentration of milk iodine. Sixty three cows in mid-lactation were assigned to a 3 x 3 factorial with: 0.25, 0.5 and 1.0 mg dietary iodine / kg DM and three different post dip managements: chlorhexidine (no iodine) with dip cup, 1% iodine dip cup and 1% iodine hand spray, for a total of 9 treatments. Milk iodine concentrations increased linearly with iodine intake. Although teat dipping with 1% iodine had a minor effect on milk iodine concentration, the same solution applied by spraying caused a ten fold greater increase of milk iodine. This can probably be explained by the fact that iodine can be absorbed through the skin. The second experimental study was conducted to determine the effects of udder preparation before milking on milk iodine concentrations. Thirty-two lactating cows were assigned to 4 treatments: no predip; predip with a predip solution containing 0.5% iodine + complete cleaning; predip with a postdip solution containing 1% iodine + complete cleaning; and predip with a predip solution containing 0.5 % iodine + incomplete cleaning. Predipping had only a minor effect on milk iodine when performed with a predip solution and completely wiped off. Utilisation of a postdip solution or incomplete cleaning resulted in greater milk iodine concentration. The results of these studies indicate that, in order to preserve milk safety, iodine should not be fed above requirements. Spraying iodine-based teat dipping solutions results in large increases in milk iodine content and should be avoided. Predipping teats with an iodine-based sanitizer is an acceptable practice, however, it must be performed with the appropriate product and the sanitizer must be completely wiped off before milking.