



PRACTICE ISSUE EVIDENCE SUMMARY

Best Practice Issue (state as a question, PICO): Due to processing, which involves chlorinated water, are baby carrots harmful to our health?	
Member: Melissa Kald, Dietetic Intern	Site: WRHA 287 Broadway
Purpose: (goals, scope, intended users, settings, and patient/client groups)	
<p>Purpose: To provide an informed response towards health safety concerns of peeled baby carrots. Goals: Health care professionals will be aware of peeled baby carrot processing procedures and be able to explain the purpose for chlorine use in processing of ready-to-eat vegetables to communicate the safety of the product to clients. Users: Health Care Professionals Settings: Public Health, Primary Care Patient/Client Group: Adults; Families</p>	
Definitions:	
<p>Baby carrots: Originate from sweet varieties of carrots that are harvested early to give the small size. Baby-cut (cocktail) (baby-peeled) carrots: Originate from large sweet carrots that are cut into two inch lengths, peeled, and then rounded at the tips. Potable water: water considered safe for drinking (ie. municipal water supply) Centrifugal Drier: A drying apparatus that uses centrifugal force to remove water from vegetables.</p>	
Evidence Review:	
<p>A literature review was done on peer reviewed journals regarding chlorine use on processed carrots or ready-to-eat vegetables. No research appears to be done on the safety of the chlorine used in baby carrot processing. Articles found compared the effectiveness of varying levels of chlorine on disinfecting ready-to-eat vegetables or comparing the effectiveness of chlorinated water to other disinfecting processes. All materials read on processing ready-to-eat vegetables stated chlorinated water as the most effective procedure.</p> <p>Personal Correspondence with Julie Soley Consumer Relations Bolthouse Farms (September 29, 2008): Chlorine is used to sanitize the water used to clean the carrots and kill microbes on the vegetables. Chlorine used in the water for processing the carrots is at a lower level than tap water. The carrots move quickly through the production process. The chlorine used in the production process is continuously monitored. The white coating that appears on the carrots is due to dehydration and can be reversed by soaking the carrots in cold water.</p>	

Email Correspondence with Kim Cooper for “The Chatham Daily News” (September 29, 2008):

Kim Cooper posted an article for the “The Chatham Daily News” on chlorine and baby carrot production. He sent me the information he received from a Chatham-Kent, Ontario, baby carrot producer. The farmer states that certain varieties are grown specifically for the cut and peel process. Carrots that grow over 7/8 of an inch in diameter are either discarded or sent to another use because they are unacceptable for the baby carrots. Large carrots are never used. However, small carrots that are long are excellent for the cut and peel process. Crooked and deformed large carrots are taken off the line during the sorting process. The peeling process on these carrots only removes a very minute amount of skin from the carrots. In fact, any carrot you would peel in your kitchen with a knife or peeler will remove much more peeling than the cut and peel process. The ends are rounded by the tumbling process. The chlorine solution is Chatham-Kent municipal water right out of the tap in the case of the Chatham-Kent carrot plant. If municipal water falls below food grade standards during the regular testing procedures, minute amounts of “food grade chlorine” may be added to insure that the food safety standards are met. Carrot whitening has nothing to do with chlorine. It is the drying and oxidization process that occurs when you remove the peeling from the carrot. You will sometimes see a very small amount of water in some bags if they are very fresh. Fresh water is sometimes placed in the bag to maintain freshness and delay the oxidation process. This would be the equivalent to the water spray nozzles that you see in the grocery stores that spray the produce regularly.

DOLE website consumer information for fresh vegetables:

How are DOLE Mini Peeled Carrots made?

Mini peeled carrots are made from a whole, full-length carrot. The carrot is cut into 2-inch pieces, peeled, polished, rinsed in ice cold water, and packaged for your added convenience.

Do I have to wash my head of lettuce (bag of carrots, head of cauliflower, asparagus, celery, etc.) or other DOLE Fresh Vegetables before eating?

DOLE Fresh Vegetables are not sold ready-to-eat and should be washed before eating. This does not apply to DOLE Pre-cut Salads or DOLE Mini Peeled Carrots, which have already been washed and are ready-to-eat.

Carrots: Preparation Tips

“Wash, trim and peel whole carrots before using. If using peeled mini carrots or pre-cut sticks, these products are ready-to-eat and do not need to be washed”.

Canadian Food Inspection Agency- Code of Practice for Minimally Processed Ready-to-Eat Vegetables:

“Chlorine may be added to wash water to reduce microbial contamination on produce. After the chlorination treatment, excess chlorine must be removed from the produce by rinsing with potable water or use of centrifugal drier”.

Recommendations:

- Peeled baby carrots can be included as part of a nutritious diet.
- To reverse dehydration soak the carrots in cold water.

Practice Changes:

Health care providers will have informed information and recommendations.

Anticipated Impact:	
Informed information provided to public.	
Recommendation for implementation:	
References:	
<p>Cooper, K. (2008, September). The origin of the baby carrot. <i>The Chatham Daily News</i>. Retrieved September 28, 2008. http://www.chathamdailynews.ca/ArticleDisplay.aspx?e=1167304&auth=KIM%20COOPER</p> <p>Canadian Food Inspection Agency: Code of Practice for Minimally Processed Ready-to-Eat Vegetables. (November 15, 2005). Retrieved October 2, 2008. http://www.inspection.gc.ca/english/fssa/frefra/safsal/read-eat_e.shtml</p> <p>DOLE: Fresh Vegetables. Retrieved September 28, 2008. http://www.dole.com/CompanyInfo/Contact/HelpDest_Veg.jsp</p> <p>Snopes.com. Carrot and Shtick. (April 23, 2008). Retrieved September 23, 2008. http://www.snopes.com/food/tainted/carrots.asp</p>	
These recommendations are being reviewed by:	
Community Nutritionist Practice Council	November 3, 2008
Primary Care Dietitians Practice Council	October 17, 2008