

# ALCOHOL CONTENT IN DECLARED NON- OR LOW ALCOHOLIC BEVERAGES: IMPLICATIONS TO PREGNANCY

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## ABSTRACT

### Background

Alcohol consumption in pregnancy may result in serious adverse fetal outcome. Non- or low alcoholic wines and beers may be a risk-reduction strategy to help alcohol-dependent individuals to prevent or limit ethanol consumption. The objective of this study was to quantify ethanol concentrations in Canadian beverages claiming to contain no or low alcohol content.

### Methods

Forty-five different beverages claiming to contain no or low alcohol content in the Canadian market were tested for ethanol concentration using gas chromatography.

### Results

Thirteen (29%) of the beverages contained ethanol levels higher than the declared concentration on their label. Six beverages claiming to contain no alcohol were found to contain greater than 1% ethanol.

### Conclusion

Pregnant women seeking replacement to alcoholic beverages may be misled by these labels, unknowingly exposing themselves and their unborn babies to ethanol.

Over 50% of women of reproductive age in North America consume alcohol.<sup>1</sup> There is heightened awareness among women and their families that ethanol may damage the developing embryo and fetus.<sup>2</sup> In its extreme, fetal alcohol spectrum disorder (FASD) may cause life-long disability in up to 1% of babies in North America.<sup>3</sup>

While abstaining from any alcoholic beverages in pregnancy is the overwhelming recommendation of medical authorities, some women find it difficult to discontinue alcohol consumption. This includes not only alcohol dependent mothers, but also women who consume alcohol regularly as part of their lifestyle. The Motherisk Alcohol and Substance Helpline receives questions from women regarding the fetal safety of non-alcoholic wines and beers, low-alcohol beer or related beverages to deal with the cravings of alcoholic beverages.

Presently, there are scores of non-or low alcoholic wines, beers and similar beverages on the Canadian market. These are described as light wine coolers, near beer, dealcoholized, alcohol removed and similar descriptions. The objective of the present study was to quantify the concentrations of ethanol in beverages claiming to contain no ethanol or low ethanol (<0.5%).

## METHODS

We purchased beverages with labels claiming to contain low-or no ethanol from local grocery stores. When available, products were purchased in triplicate and from different lot numbers. Beverages were aliquoted into coded test tubes for analysis. Ethanol levels were quantified by a blinded technician using a validated gas chromatography.<sup>4</sup> The concentrations of ethanol were calculated from the mean of the three measurements and compared to the levels claimed on the label.

## RESULTS

Forty-five different beverages were submitted for analysis. The analysis revealed that 13 beverages tested contained ethanol levels that were higher than claimed by their labels (Table 1). Six beverages analyzed contained ethanol levels that were above “low ethanol” levels (>0.5%). The coefficient of variation of measurement in the triplicate sample was <5%. Six products from one company, claimed to contain no alcohol, had ethanol levels between 1.2-1.8% of ethanol.

## DISCUSSION

The results of our study are very concerning, as these beverages may contain more alcohol content than initially reported. A potential contributor to the alcohol detected within the beverages may be due to the degradation of fruit. However, manufacturers of the beverages should be aware that alcohol is generated through the degradation process and have mechanisms to monitor and ensure that ethanol remains below the limit stated on their labels. The results also suggest that women who are considering drinking

these beverages as a substitute for other alcohol-containing beverages may be misled. This is especially serious in the case of beverages labeled as non-alcoholic, because women may consume them in large volumes, assuming they are not exposing their fetus to the risks of ethanol. Given the conflicting recommendations from different health bodies regarding whether or not the consumption of small quantities of alcohol is a safe practice during pregnancy, alcohol content in beverages is also an important confounding factor to consider. Since it is unknown how much alcohol is required to result in adverse effects in their unborn children, pregnant women are encouraged to err on the side of caution, and therefore recommended to abstain from alcohol consumption during pregnancy in order to avoid the risk of FASD. This is especially important since the beverages that were tested contained more ethanol than reported on their labels.

Given the identification of higher quantities of alcohol in beverages than reported on their labels, it suggests that agencies regulating food and beverages must increase the quality of their examination of non-and low alcoholic beverage to avoid this unacceptable situation.

**TABLE 1** Concentrations of ethanol in selected proclaimed non alcoholic beverages sold in Canada\*

Product Name	Label Claims	Sample 1 (%)	Sample 2 (%)	Sample 3 (%)	Average (%)
Banks Tiger Malt-Malt Beverage Non-alcoholic 341mL	Non-alcoholic	ND	ND	ND	ND
Beck's Non-alcoholic 6x330mL 0.0% alc/vol	0.00%	0.02885	0.02931	0.02940	0.02919
Carl Jung De-alcoholized red wine contains less than 0.5% alco/vol 750mL	less than 0.5%	0.10028	0.13364	0.22120	0.15171
Carl Jung De-alcoholized red wine contains less than 0.5% alc/vol 750mL	less than 0.5%	0.10028			0.10028
Carl Jung De-alcoholized white wine contains less than 0.5% alc/vol 750mL	less than 0.5%	0.04083	0.18894	0.19355	0.14111
Carl Jung De-alcoholized white wine contains less than 0.5% alc/vol 750mL	less than 0.5%	0.04083			0.04083
Carl Jung Imported de-alcoholized sparkling wine contains less than 1/2 of 1% alc/vol 750mL	less than 0.5%	0.03751			0.03751
Carl Jung merlot de-alcoholized red wine contains less than 0.5% alc/vol 750mL	less than 0.5%	0.19051			0.19051
Carl Jung Riesling De-alcoholized white wine contains less than 0.5% alc/vol 750mL	less than 0.5%	0.35530			0.35530

Alcohol content in declared non-or low alcoholic beverages: implications to pregnancy

Casal Domingo Light Wine Cooler Cranberry Ice 0.5% alc/vol 341mL	0.50%	0.41475	0.39171	0.40092	0.40246
Casal Domingo Light Wine Cooler Ice Lemonade 0.5% alc/vol 341mL	0.50%	0.43779	0.41935	0.42396	0.42704
Casal Domingo Light Wine Cooler Orange Tangerine 0.5% alc/vol 341mL	0.50%	0.35945	0.35484	0.35484	0.35637
Casal Domingo Light Wine Cooler Peach Fantasy 0.5% alc/vol 341mL	0.50%	0.35023	0.35023	0.36406	0.35484
Casal Domingo Light Wine Cooler Summer Passion 0.5% alc/vol 341mL	0.50%	0.34562	0.29032	0.35484	0.33026
Casal Domingo Light Wine Cooler Tropical Splash 0.5% alc/vol 341mL	0.50%	0.29954	0.30415	0.30415	0.30261
Casal Domingo Light Wine Cooler Wild Harvest Berry 0.5% alc/vol 341mL	0.50%	0.33180	0.34101	0.33641	0.33641
DG Old Jamaican Ginger Beer Naturally and Artificially Flavoured Carbonated Beverage 300mL Non-alcoholic	Non-alcoholic	ND	ND	ND	ND
Grace Malta Malt Beverage Non-alcoholic 341mL	Non-alcoholic	ND	ND	ND	ND
Holstein Non-alcoholic imported from Germany 0.0% alc/vol 330 mL	0.00%	0.01382	0.01382	0.01382	0.01382
Inglenook St Regis alcohol removed Cabernet Sauvignon less than 0.5% alc/vol 750mL	less than 0.5%	0.31797			0.31797
Inglenook St Regis alcohol removed Chardonnay less than 0.5% alc/vol 750mL	less than 0.5%	0.34101			0.34101
Inglenook St Regis reserve alcohol removed White Zinfandel contains less than 0.5% alc/vol 750mL	less than 0.5%	0.23502			0.23502
Labatt Nordic Low alcohol premium beer less than 0.5% alc/vol 355mL	less than 0.5%	0.20276	0.21659		0.20968
Master Choice de-alcoholized beer Ice contains less than 0.5% alc/vol 355mL	less than 0.5%	0.33641	0.32258	0.33641	0.33180
Master Choice de-alcoholized Beer Lager contains less than 0.5% alc/vol 355mL	less than 0.5%	0.31797	0.30415	0.32719	0.31644
Master Choice de-alcoholized Ice Beer 0.5% alc/vol 355mL	0.50%	0.33641	0.32719	0.35484	0.33948
Molson EXEL contains less than 0.5% alc/vol 355mL	less than 0.5%	0.28111	0.27189	0.29032	0.28111
Mr. Goudas 052 West Indian Style Ginger Beer Non-alcoholic	Non-alcoholic	0.10922	0.10912	0.10737	0.10857
Premium Canadian Champanade Non-alcohol red 750mL	Non-alcoholic, alcohol free	0.69124	2.30415	2.36406	1.78648
Premium Canadian Champanade Non-alcohol sparkling cranberry 750mL	Non-alcoholic, alcohol free	1.07834	1.26267		1.17051
Premium Canadian Champanade Non-alcohol sparkling peach 750mL	Non-alcoholic, alcohol free	2.27650	1.22120	1.23041	1.57604
Premium Canadian Champanade Non-alcohol sparkling raspberry 750mL	Non-alcoholic, alcohol free	1.88940	1.34101	1.11982	1.45008
Premium Canadian Champanade Non-alcohol white 750mL	Non-alcoholic, alcohol free	1.43779	2.45161	1.14747	1.67896
Premium Canadian Champanade Non-alcohol white and apple 750mL	Non-alcoholic, alcohol free	1.40553	1.17051		1.28802
President's Choice de-alcoholized beer Lager brew contains less than 0.5% alc/vol 355mL	less than 0.5%	0.30415	0.29954	0.20737	0.27035

Alcohol content in declared non-or low alcoholic beverages: implications to pregnancy

President's Choice de-alcoholized beer Red brew contains less than 0.5% alc/vol 355mL	less than 0.5%	0.36406	0.36866	0.35484	0.36252
President's Choice Organics Sparkling Apple Juice Beverage Non-alcoholic 750mL	Non-alcoholic	ND			0.00000
President's Choice Organics Sparkling Apple-Cranberry Juice Beverage Non-alcoholic 750mL	Non-alcoholic	ND			0.00000
Scotts Bros Ice Vodka flavour 0.5% alc/vol 341mL	0.50%	0.44700	0.45622	0.44240	0.44854
Scotts Bros Pink Grapefruit with ginko biloba with ginseng 0.5% alc/vol 341mL	0.50%	0.51613	0.53917	0.54839	0.53456
Vitare Delicious Peach Sparkling Spritzer contains no alcohol 750mL	contains no alcohol	0.06912			0.06912
Vitare Delicious Raspberry Sparkling Spritzer contains no alcohol 750mL	Non-alcoholic; contains no alcohol	0.11060			0.11060
Vitare Delicious Sparkling Apple Cider Premium Non-alcohol 750mL	Non-alcoholic; contains no alcohol	0.02304			0.02304
Vitare Sparkling Delicious Superior Wine-grape Spritzer Non-alcoholic 750mL	contains no alcohol	0.04147			0.04147
Vitare Sparkling Non-alcoholic delicious made deluxe wine-grape spritzer contains no alcohol 750mL	Non-alcoholic	0.03687			0.03687

\* In some cases less than 3 samples per product could be located for analysis  
Abbrev: ND = not detectable

### Acknowledgements

GK is holder of the Research Leadership for Better Pharmacotherapy during Pregnancy and Lactation (The Hospital for Sick Children, Toronto, Canada) and the Ivey Chair in Molecular Toxicology, Department of Medicine, University of Western Ontario, London, Canada.

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