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Gas chromatographic analysis of methanol and acetaldehyde in different types of alcoholic beverages in Sri Lankan market

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Alcohol abuse is a major problem in Sri Lanka. Alcohol policies cannot be based on religious views, political expediency or tax revenue. Pitfalls in following policies followed in developed societies without regard to the local conditions abound. A sufficient body of evidence based knowledge exists today in the medical literature to help formulate a rational alcohol policy that suits to Sri Lanka. Beside ethyl alcohol almost all alcoholic drinks contain volatile and nonvolatile substances called congeners. Congeners are present in different concentrations depending on beverage type and manufacturing method. Acetaldehyde and methanol are two important toxic volatile congeners in alcoholic beverages. Therefore the levels of methanol and acetaldehyde content are strictly regulated. In this study methanol and acetaldehyde, were determined in different type of local and imported alcoholic beverages submitted to the liquor laboratory of the Government Analyst's Department in the year 2016 by the Sri Lanka Excise Department for the tax purpose. Twenty four coconut arrack, five palmyrah arrack, nineteen blended and imported brandy, fourteen imported whisky, eighty four imported red wines and seventy five imported white wines were analyzed. Samples were distilled prior to the injection and methanol and acetaldehyde were quantified using Gas Chromatography (Shimadzu GC 2010 plus, RTX 624 capillary column) with FID detector. The methanol content of red wine was in the range of 45.8-266.5 ppm, white wine 10.3-196.9 ppm, brandy 9.1- 22.6 ppm, whisky 45.8 -268.6 ppm, and methanol was not detected in coconut and palmyrah arrack, Whereas acetaldehyde content of coconut arrack was in the range of 6.3-36.3 g/hL AA, palmyrah arrack 3.8-9.2 g/hL AA, brandy 5.4-10.4 g/hL AA, whisky 3.1-17.3 g/hL AA, and acetaldehyde was not detected in red and white wine. These results may be useful for risk assessment of acetaldehyde and methanol, and form a scientific foundation for establishing legislative limits in Sri Lanka.

Biography

M.G.S.A.Wimalasena is a senior Assistant Government Analyst in the Government Analyst's Department. The Government Analyst's Department is the central food laboratory and the only forensic laboratory in Sri Lanka. She is having more than 23 years' experience in the field of Food and Alcoholic Beverages. Her main duties involve the supervision and conduction of analysis and reporting of the quality of various food and liquor items submitted by the government food authority under the Food Act, Consumer Protection Act and Excise Ordinance of Sri Lanka. She is responsible for developing, maintaining and monitoring of the laboratory quality management system as a Quality Manager. She conducts lectures and workshops for Medical Officers, Food and Drug Inspectors, Public Health Inspectors and Excise Officers and actively participates in Drafting Committees of Sri Lanka Standards Institution for formulating new Sri Lankan standards. She also provides analytical and advisory services to the Health Department and other law enforcement authorities.

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