

# DEVELOPMENT AND VALIDATION OF A RAPID AND SIMPLE GAS CHROMATOGRAPHIC METHOD FOR THE DETERMINATION OF ADDITIONAL VOLATILE COMPOUNDS IN LIQUOR

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Distilled alcoholic beverages which are also known as liquor are made by distilling fermented alcoholic beverages. Though ethanol and water are the main constituents, some other volatile organics, which form during the fermentation process are also present in liquor. Quantification of these volatile organics is important as limitation levels for the presence of these have been given in many standards and regulations. The objective of the study was to develop a rapid and simple method to quantify some of these "additional volatile compounds" other than ethanol, present in liquor. Gas chromatography (GC), which is a useful technique to analyze volatile compound mixtures, was used for this purpose.

In the current study, a GC method was developed and validated to quantify acetaldehyde, methanol, 1-propanol, 2-propanol and ethyl acetate present in liquor. Analysis was carried out using the RTX 624 capillary column with Flame Ionization Detector (FID). The correlation coefficient ( $r^2$ ) values of 0.9991 (acetaldehyde), 0.9998 (methanol), 0.9997 (1-propanol), 0.9998 (2-propanol) and 0.9995 (ethyl acetate) were obtained for the calibration curves, which were plotted by the external standard method.

Method validation was done by determining the accuracy by recovery, precision by inter-day repeatability, intra-day repeatability and by sample preparation repeatability. Detection limits were determined based on the standard deviation of the response and the slope.

Forty two commercial liquor samples were analyzed by the validated method and 10.85- 91.73 ppm acetaldehyde, 5.31-21.20 ppm methanol, 9.73- 150.41 ppm 1-propanol, 6.55-14.57 ppm 2-propanol and 11.09- 186.23 ppm ethyl acetate were reported.