

## Identification of alcohols in selected *arishta* and *asava* used in ayurvedic medicine

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*Arishta* and *Asava* have been used as medicines for over 3000 years to treat several disorders. In addition, they are being consumed as herbal wines, appetisers and stimulants. Quantitative standard parameters of *arishta* and *asava* have not been documented. Research for determination of constituents and contaminants of these products highlight the importance of analyzing these products to ensure their quality and safety. As natural fermentation is the main preparation process of *arishta* and *asava* alcohols, flavouring compounds and other toxic material could be present. Hence identification of types and levels of alcohols and other chemicals that are present in these preparations is important to prepare the standards for them.

In this preliminary study, a qualitative determination of alcohols in commercially available 12 brands of *Ashvagandharishta* and 6 brands of *Aravindasava* was carried out using gas chromatography. Samples were distilled and the distillate was used for the analysis.

Quantitative determination of 12 brands of *Ashvagandharishta* showed that in addition to ethanol, methanol (max 209.4, min 31.1; mean  $101.9 \pm 48.6$  ppm), n-propanol (max 28.1, min 3.2; mean  $12.3 \pm 7.6$  ppm), iso butanol (max 65.3, min 7.9; mean  $24.9 \pm 17.1$  ppm), amyl alcohol (max 155.3, min 53.7; mean  $99.3 \pm 34.5$  ppm) and isopropyl alcohol (max 9.3, min 4.6; mean  $5.9 \pm 1.4$  ppm) were present in all the products. Similarly, methanol (max 132.6, min 28.3; mean  $57.5 \pm 39.5$  ppm), n-propanol (max 12.1, min 1.6; mean  $4.8 \pm 3.8$  ppm), iso butanol (max 31.3, min 19.9; mean  $23.8 \pm 5.6$  ppm), amyl alcohol (max 103.8, min 75.8; mean  $92.0 \pm 11.2$  ppm) and isopropyl alcohol (max 6.3, min 4.3; mean  $5.1 \pm 0.7$  ppm) were present in the 6 brands of *Aravindasava*.

The presence of toxic compounds like methanol in these products highlights the need for further studies related to the manufacturing process of *ayurvedic* preparations.

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