Functionality of *Azadirachta indica* A. Juss (neem) in beverages

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ABSTRACT

The rise in consumer health awareness and an increase of interest in ancient herbal remedies has led to a spurt in food products that go beyond meeting our daily nutritional requirements and provide us protection against chronic diseases. Our study investigates one such medicinal tree—*Azadirachta indica* A. Juss (Neem). We found that neem is rich in specific flavonoids—myricetin, quercetin and kaempferol as compared to green and black tea, although the total polyphenolic content was much lower in neem tea. The volatile profile also reveals high quantities of sesquiterpenes, which potentially have bio-active capacities. Like with many plant remedies, the compounds that contribute to the health properties of neem are also bitter. We explored two different de-bitterness strategies—Solid phase extraction (SPE) and Amberlite XAD-16 (XAD) resins to understand the health and taste trade-off. We found that SPE treatment was “harsher” and led to a significant removal of polyphenols and a reduction in anti-oxidant activities as compared to AMB treatment. With the increasing popularity of ready to drink beverages (RTD’s), the area of protein-polyphenol interaction has assumed much importance. The addition of bovine milk causes a significant decrease in polyphenols and anti-oxidant activities across all three types of tea—green, black and neem. However, this decrease was more significant for green and black tea. The addition of soya milk was found to have the least effect on the recovery of polyphenolic compounds and consequently had the least impact on anti-oxidant activities of green tea. Hence, the combination of a neem infusion as the matrix and soya milk as the milk addition is favorable for product development purposes, when potential health properties of RTD’s are in consideration.