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Quantitative and qualitative analysis of sugars in carbonated drinks and their impact on teeth

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Objective: The contemporary changes in the diet pattern especially the surge in the consumption of carbonated beverages have its impact on the systemic and dental health among young adults of Saudi Arabia. The pH and the sugars in the carbonated drinks are associated with dental caries and erosion. The study aimed to determine the quantity and quality of sugars and the pH in the commonly available carbonated drinks. The amount of total sugars, glucose, fructose, sucrose, artificial sweeteners were estimated and compared to their labelled values. It also reviews the implications of these drinks on teeth.

Methods: Ten brands of carbonated drinks were obtained from the local supermarkets of Jazan, Saudi Arabia. Their pH was determined using a pH meter. The quantity of total sugar, glucose, fructose, sucrose and artificial sweeteners were estimated based on High performance liquid chromatography using a Dionex ICS 5000 ion chromatography at Food and Drug Authority, Saudi Arabia.

Results: The pH of these drinks varies from 2.46 to 3.20 much below the critical value for enamel dissolution. The total sugar content in this sample ranged from 11.29 to 16.46 with energy drinks such as Bugzy and Bison having highestsugar content but comparatively less sucrose. In contrast, Seven Up had high sucrose compared to their glucose and fructose level but their total sugar concentration was least. Mild positive variation was observed for the sugar concentration compared to their labelled values in most of these samples. Diet Pepsi had artificial sweeteners like acesulfame K, saccharin and aspartame within acceptable limits but no sugars.

Conclusions: The pH, quality and quantity of sugars in the carbonated drinks prove to be deleterious to dental health. This calls for an urgent need to create public awareness about the health implications of consuming these carbonated beverages. Educational and behavioural research is needed to determine strategies to moderate the frequency of intake of carbonated beverages.

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