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Evaluation of calcium, magnesium and fluoride content in drinking water samples from Jazan Province and their impact on dental caries

Ali Abuhya
Iran

Objective: The minerals in the drinking water play an important role in human nutrition. Apart from their systemic effects, they also affect the mineralised tissue of the teeth. Since there is an apparent increase in the usage of bottled water in this geographic region, they should provide the optimal amount of these minerals to impart dental health. The concentration of minerals calcium, magnesium and fluoride in the oral environment is critical for tooth remineralisation. The purpose of this study is to investigate the quantity of minerals such as calcium, magnesium and fluoride of most widely distributed domestic and imported brands of bottled water and also the natural sources of drinking water available in Jazan. It also compares the estimated values with those printed on their labels. The study further discusses whether the mineral composition in the drinking water creates the right environment in the oral cavity for promoting the repair of demineralised teeth.

Method: Theconcentration of Ca, Mg and F was determined for 12 brands of local bottled water, 3 brands of imported bottled water and 8 samples of natural source drinking water. Their concentrations were determined on the basis of analytical ion chromatography using a Dionex ICS 5000 ion chromatography system at Food and Drug authority (FDA) laboratory, Saudi Arabia.

Result: The local brand of bottled water had lower concentration of calcium and magnesium than the recommended level but optimal fluoride content. The imported brand of bottled water has maintained the optimal calcium level whereas their magnesium and fluoride levels are comparatively lower than recommended. On the other hand, the natural source of drinking water had quite a good amount of calcium and magnesium but their fluoride level is negligible.Both negative and positive types of variations were noticed in the concentration of these minerals compared to their labelled values.

Conclusion: Wide variation was observed in the mineral content of both commercially available bottled waters and natural source of drinking water with majority of them having suboptimal ca and mg. As mineral-rich drinking waters provide substantial contributions to total intake of these nutrients, the manufacturers should ensure the quality of bottled water by supplementing it with the recommended quantity of these minerals. Drinking water with the recommended concentration of Ca, Mg and F create a positive environment in the oral cavity for promoting regeneration processes ofthe mineralised tissue in tooth carious process. Knowledge of the mineral content of the drinking water and their health significance is essential to both public and health care professionals. Further studies correlating the levels of these minerals in drinking water and the prevalence of dental caries in this geographic region are recommended.

dhafialonny@hotmail.com

Dental Ceramics : A Recipe for Success

Ayman "Moh'dKhairy" Lubbadeh
University of Jordan, Jordan

Ceramics are widely used in dentistry as indirect restorations due to their biocompatibility and pleasing aesthetics. This fact made the development in the field of ceramics and their machinability to evolve dramatically. Currently there are dozens of available ceramics in the market. In order to optimize the aesthetic outcome for the different scenarios that we encounter in our practice; a thorough knowledge of the indications for each type of ceramic is a key factor. This presentation will explore the use of ceramic material in aesthetic dentistry. An overview of some of the available Cad/Cam blocks demonstrating the indication of each type supported by clinical cases. Guidelines will be proposed for the use of the optimal ceramic accordingly to the clinical situation emphasizing the importance of sequencing and design consideration.

aymanlubbadeh@gmail.com