Current Development of Saliva/Oral Fluid-based Diagnostics

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Abstract
Saliva can be easily obtained in medical and non-medical settings, and contains numerous bio-molecules, including those typically found in serum for disease detection and monitoring. In the past two decades, the achievements of high-throughput approaches afforded by biotechnology and nanotechnology allow for disease-specific salivary biomarker discovery and establishment of rapid, multiplex, and miniaturized analytical assays. These developments have dramatically advanced saliva-based diagnostics. In this review, we discuss the current consensus on development of saliva/oral fluid-based diagnostics and provide a summary of recent research advancements of the Texas-Kentucky Saliva Diagnostics Consortium. In the foreseeable future, current research on saliva based diagnostic methods could revolutionize health care.

KEY WORDS: Point of care, multiplexed test, biomarkers, salivary diagnostic, lab-on-a-chip, AMI, cancer.

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Introduction
Saliva, or oral fluid, has long been of interest as a substitute for blood and other body fluids for disease diagnosis and disease/drug monitoring because it is readily accessible, as it can be obtained non-invasively. However, saliva diagnostics are not widely used due to the lack of well-defined salivary biomarkers for specific diseases, appropriate technologies for low sample volume analysis, and social and medical professional acceptance (1, 2).
Weekly Monitoring of the Water Fluoride Content in a Fluoridated Metropolitan City — Results After 1 Year

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Introduction

The fluoridation of community drinking water raises many questions and continues to be a source of controversy (1, 2). In the United States, the Centers for Disease Control and Prevention (CDC) is a strong proponent of drinking water fluoridation for the prevention of dental caries (3). Furthermore, it has been a stated goal of the United States Department of Health and Human Services that by the year 2010, 75 percent of the United States population would have access to fluoridated drinking water, with fluoride concentrations falling in the range of 0.7-1.2 parts per million (ppm) (4, 5).

Abstract

It continues to be the goal of the United States Department of Health and Human Services to fluoridate community water supplies to prevent dental caries. In Houston, Texas, where community water is assumed to contain in the range of 0.7-1.2 ppm fluoride, water samples were taken from the same source on approximately a weekly basis over a period of 52 weeks. The purpose of this study was to determine the extent of fluctuation of water fluoride concentration in these samples. Water fluoride analysis with an ion-specific electrode and millivolt meter of the data set showed a range of 0.33 to 1.00 ppm fluoride, with a mean of 0.70 ppm and a standard deviation of 0.15. This wide range of fluoride concentrations may create a risk for fluorosis in pediatric patients who are prescribed dietary fluoride supplements.

KEY WORDS: Community drinking water, fluoride supplements, fluorosis, tap water

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Abstract

Manufacturers of dental units have responded positively to the challenge from the American Dental Association (ADA) and the subsequent guidelines issued by the Centers for Disease Control and Prevention (CDC) to deliver patient treatment water that is at least as pure as drinking water. Dental units are now routinely manufactured with anti-retraction devices that are designed to control oral fluids from being aspirated into the lines during treatment and many units have water systems that isolate source water from municipal water supply. The dental industry has also produced an array of devices and cleaning/disinfectant products to further facilitate the use of clean patient treatment water. Products that claim disinfectant efficacy must be registered with the Environmental Protection Agency (EPA). If they are not EPA-registered, they can be labeled as waterline cleaners only. Waterline treatment devices that are sold separately and require connection to dental units must be registered with the Food and Drug Administration (FDA) as medical devices. Patient treatment water quality can be monitored by using in-office chairside kits or through commercial laboratory services.

KEY WORDS: Dental unit waterline contamination, biofilm, dental unit waterline treatment products cessation

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Dental Unit Waterline Contamination — A Review

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A Historical Perspective

Contamination of patient treatment water and its reduction with chlorhexidene was first described in the British Dental Journal over 40 years ago (1). Ten years later, it was reported that bacterial levels in water emitted from highspeed handpieces, air/water syringes, and ultrasonic lines were as high as 2-3 million colony forming units per milliliter (CFU/mL) (2). Although the American Dental Association (ADA) issued a recommendation in 1978 that dental unit waterlines (DUWL) should be flushed with chemical germicides, they deferred to dental unit manufacturers on treatment methods at that time (3). National guidelines and recommendations were subsequently developed in the 1990’s and later revised, as illustrated in the following timeline (4-9).