

# aware Messenger™

## A Device for the Collection, Stabilization, and Transport of Oral Fluid Specimens

Cat. No. 98184

Box of 50

Contains individually packaged collection devices consisting of a Collection Swab and Specimen Collection Tube

Store between 2° - 30° C

Manufactured in the USA for: Calypte Biomedical Corporation  
16290 SW Upper Boones Ferry Road  
Portland, OR 97224  
Tel: 503-726-2227  
www.calypte.com

### NAME AND INTENDED USE

The Aware Messenger™ collection device is intended for the collection, stabilization, and transport of an oral fluid specimen to be used for the detection of specific antibodies or analytes. Applications for specific diagnostic use may be used only with an appropriately validated assay in compliance with local regulations.

### MATERIALS PROVIDED

Each individually packaged Aware Messenger™ collection device set includes one each of the following:

- Oral fluid Collection Swab
- Specimen Collection Tube with Sample Buffer containing protein stabilizers, salts, detergents, and preservative.

### WARNINGS AND PRECAUTIONS

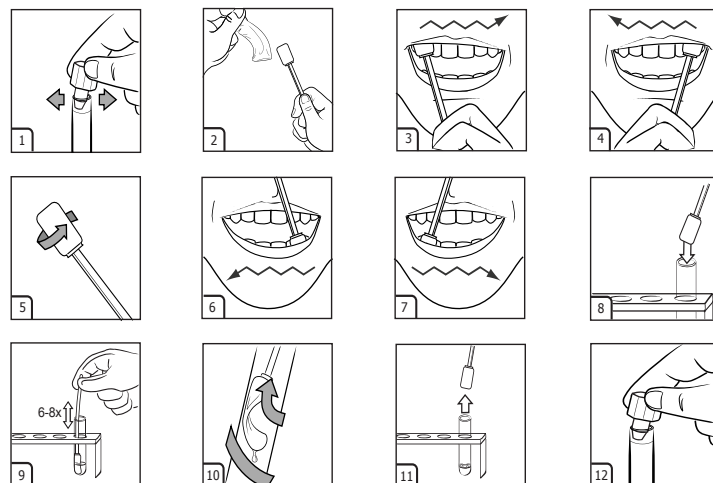
1. The performance characteristics of the Aware Messenger™ collection device have not been established for any specific assay or test. Use with any specific assay for diagnostic purposes must be properly validated by the laboratory conducting the testing.
2. Storage conditions of collected specimens depend upon the application.
3. Although risk of exposure to pathogenic organisms from oral fluid is in most cases lower than from blood, handle specimens and materials contacting specimens as if potentially infectious biological materials, in accordance with "Universal Precautions for Prevention of Transmission of Human Immunodeficiency Virus, Hepatitis B Virus, and Other Bloodborne Pathogens in Health-Care Settings" (CDC, MMWR, June 24, 1988).
4. Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910) apply to personnel collecting and handling human clinical specimens.
5. Federal, state, and local regulations for human biologic test specimens apply to the transportation of oral fluid specimens which may contain etiologic agents (39 CFR 111). Other local regulations may also apply.

### WARNINGS AND PRECAUTIONS (continued)

6. Use freshly prepared 10% bleach to decontaminate surfaces in the event of a spill of collected specimen.
7. Avoid contamination of Collection Swab and sample buffer with foreign matter.
8. Do not use the Collection Swab if the package has been opened.
9. Do not touch the Collection Swab pad with fingers before or after specimen collection.
10. Do not reuse the Collection Swab or sample buffer.
11. Do not use device beyond the expiration date shown on the device package.

### PROCEDURE

- (1) Remove the cap from the tube (Figure 1).
- (2) Remove the clean Collection Swab from the pouch. Grasp the swab by the handle. Avoid touching the cloth end of the swab (Figure 2).
- (3) Insert the swab into the back corner of the upper gum line in the mouth. Apply moderate pressure to slowly and gently brush the entire upper gum line up and down with the cloth end of the swab until reaching the other corner of the mouth (about 10 seconds) (Figure 3).
- (4) Swab back across the upper gum line to where you started (about 10 seconds) (Figure 4).
- (5) Turn the swab to use the other side of the swab for the lower gums (Figure 5).
- (6) Repeat procedure, gently brushing the lower gum line (Figures 6 and 7).
- (7) Immediately and carefully place the swab in the Specimen Collection Tube (Figure 8).
- (8) Grasp the swab handle firmly and slowly plunge the swab up the down 6-8 times in the tube, rubbing both sides of the swab against the sides of the tube (Figures 9 and 10).
- (9) Wring out fluid as the swab is being removed from the tube and discard swab (Figures 10 and 11).
- (10) Cap the tube (Figure 12). The sample is now ready for testing or transport.



### BACKGROUND

There has long been an attraction to oral fluid as a specimen for the detection of various analytes because of the inexpensive, safe, and non-invasive methods for sample collection as compared to blood testing. Ellison et al.<sup>1</sup> confirmed the presence of immunoglobulin in saliva in 1960. Two studies in the late 70's reported the use of oral fluid collected with swabs for hepatitis B surface antigen and feline leukemia virus<sup>2,3</sup>. Throughout the next 30 years, increasing numbers of oral fluid testing studies were published.

Today, the testing of oral fluid for antibodies, antigens, and other analytes is a well-established and accepted form of clinical care, monitoring, and research throughout the world as evidenced by the numerous applications approved by US FDA, including those for HIV diagnosis, as well as a wide variety of publications in the scientific literature. These published studies support the efficacy of oral fluid testing in a number of diverse applications including detection of antibody to (1) infectious bacterial diseases (such as shigella dysentery<sup>4</sup>, *Haemophilus influenzae*<sup>5</sup>, and *Bordetella pertussis*<sup>6</sup>), and (2) viral infections (HIV<sup>7,8</sup>, hepatitis A, B, C<sup>9,10,11</sup>, Epstein-Barr virus infections<sup>11</sup>, and rubella<sup>12</sup>). Thieme et al, expanded upon these studies to conclude that simultaneous detection of seroconversion occurs in serum and oral fluid samples for diseases such as hepatitis A<sup>9</sup> and after vaccination to measles, mumps, and rubella<sup>13</sup>. Other studies demonstrated the applicability of oral fluid for the detection of viral antigen (HBsAg)<sup>9,10</sup>, drugs of abuse<sup>14,15</sup>, and for the therapeutic monitoring of drugs<sup>16</sup>.

Saliva is a complex mixture of parotid, submandibular, and sublingual and minor salivary gland secretions mixed with mucin, bacteria, leukocytes, sloughed epithelial cells, and gingival crevicular fluid<sup>7</sup>. Gingival crevicular fluid, or oral mucosal transudate (OMT), is the fluid derived from the passive transport of serum components through the oral mucosa into the mouth. The concentrations of Immunoglobulin G (IgG) and other serum components in this fluid are significantly higher than in whole saliva<sup>17</sup>. Consequently, collection of oral fluid from this area of the mouth was identified as the most promising source of fluid for diagnostic testing.

The Aware Messenger™ device utilizes a clean untreated swab made of a soft absorbent material that targets those OMT-rich areas in the mouth when used as instructed. After a brief brushing along the gum lines, the oral fluid on the swab is briefly mixed with the proprietary Aware Messenger™ sample buffer containing preservatives, stabilizing agents, immunoassay-friendly detergents, and other components. Finally, the swab is discarded, the tube is capped, and the sample is ready for testing at a later time.

The Aware Messenger™ device, used in conjunction with traditional immunoassays (e.g. ELISA), adds the advantages of an oral fluid specimen, such as ease of collection and transport, to the benefits offered by conventional laboratory-based testing such as high throughput batch processing, automation, quantitative results, and lower costs.

Although the Aware Messenger™ sample buffer has been formulated for compatibility with immunoassays, specific test protocols for any given assay must be optimized and the performance of the Aware Messenger™ specimen should be validated for each individual application by the laboratory performing the test. In stability studies conducted by Calypte, specific antibody was shown to be preserved for at least 3 weeks at up to 37°C. However, it is recommended that the stability of the specific antibody or analyte in question be assessed by a validated method.

### BIBLIOGRAPHY

- <sup>1</sup> Ellison, SA, PA Mashimo, and ID Mandel. Immunochemical studies of human saliva. I. The demonstration of serum proteins in whole and parotid saliva. J. Dent. Res. 1960; 29: 892-899.
- <sup>2</sup> Petersen, NJ, et al. Hepatitis B surface antigen in saliva, impetiginous lesions, and the environment in two remote Alaskan villages. Journal of Applied and Environmental Microbiology. 1976; 32:572-574.
- <sup>3</sup> Francis, DP, M Essex, SM Cotter, D Gayzagian and D Hamm. A simple method for quantitating salivary levels of virus using calcium alginate swabs. J. Clin. Pathol. 1979; 32:514-515.
- <sup>4</sup> Oberhelman, RA, DJ Kopecko, E Salazar-Lindo, et al. Prospective study of systemic and mucosal immune response in dysenteric patients to specific Shigella invasion plasmid antigens and lipopolysaccharides. Infect. Immun. 1991; 59:2341-2350.
- <sup>5</sup> Gilsdorf, JR, and WM McDonnell. Mucosal antibodies to Haemophilus influenzae type B capsular polysaccharide. Pediatric Research 1991; 29:420-423.
- <sup>6</sup> Zackrisson, G, T Lagergard, B Trofors, and I Krantz. Immunoglobulin A antibodies to pertussis toxin and filamentous hemagglutinin in saliva from patients with pertussis. J. Clin. Microbiol. 1990; 28:1502-1505.
- <sup>7</sup> Granade, TC, et al. Detection of antibodies to human immunodeficiency virus type 1 in oral fluids: a large-scale evaluation of immunoassay performance. Clin Diagn Lab Immunol. 1998; 5(2):171-5.
- <sup>8</sup> George, JR, JH Fitch, AS Goldstein and MS Hindahl. Evaluation of a system using oral mucosal transudate for HIV-1 antibody screening and confirmatory testing. OraSure HIV Clinical Trials Group. JAMA. 1997 15;277(3):254-8. Erratum in: JAMA 1997; 12;227(10):792.
- <sup>9</sup> Thieme, T, P Yoshihara, S Piacentini, & M Beller. Clinical evaluation of oral fluid samples for diagnosis of viral hepatitis. Journal of Clinical Microbiology. 1992; 30:1076-1079.
- <sup>10</sup> Sherman, KE, RL Creager, J O'Brien, S Sargent, S Piacentini, & T Thieme. The use of oral fluid for hepatitis C antibody screening. American Journal of Gastroenterology. 1994; 89:2025-2027.
- <sup>11</sup> Andersson, J, et al. Effect of acyclovir on infectious mononucleosis: A double-blind placebo-controlled study. J. Infectious Dis. 1986; 153:283-290.
- <sup>12</sup> Friedman, MG, M Phillip, and R Dagan. Virus-specific IgA in serum, saliva, and tears of children with measles. Clin. Exp. Immunol. 1989; 75:58-63.
- <sup>13</sup> Thieme, T, S Piacentini, S Davidson, & K Steingart. Determination of measles, mumps, and rubella immunization status using oral fluid samples. Journal of the American Medical Association. 1994; 272:219-221.
- <sup>14</sup> Davey, J, N Leal, and J Freeman. Screening for drugs in oral fluid: illicit drug use and drug driving in a sample of Queensland motorists. Drug Alcohol Rev. 2007; 26(3):301-7.
- <sup>15</sup> Cone, EJ, J Clarke, L Tsanacis. Prevalence and disposition of drugs of abuse and opioid treatment drugs in oral fluid. J Anal Toxicol. 2007; 31(8):424-33.
- <sup>16</sup> Thieme, T, et al. (1993) Therapeutic drug monitoring using oral samples collected with the OraSure device. Ann N Y Acad Sci. 1993; 20:694:337-9.
- <sup>17</sup> Mortimer, PP, and JV Parry. Non-invasive virological diagnosis: Are saliva and urine specimens adequate substitutes for blood? Med. Virol. 1991; 1:73-78.