EMERGENCY USE AUTHORIZATION (EUA) SUMMARY ORACOLLECT·RNA DEVICE MODELS (ORACOLLECT·RNA ORE-100 AND ORACOLLECT·RNA OR-100)

For In Vitro Diagnostic Use
Rx Only
For Use Under Emergency Use Authorization (EUA) Only

INTENDED USE

The ORAcollect·RNA ORE-100 and ORAcollect·RNA OR-100 (ORAcollect·RNA) saliva collection devices are intended for use by individuals to collect, stabilize, and maintain during transport saliva specimens suspected of containing SARS-CoV-2 ribonucleic acid (RNA).[1]

The ORAcollect·RNA ORE-100 and ORAcollect·RNA OR-100 saliva collection devices are only for use under the Food and Drug Administration's Emergency Use Authorization.

DEVICE DESCRIPTION AND COLLECTION PRINCIPLE

ORAcollect·RNA device models (ORE-100 and OR-100) are physically and chemically equivalent and are used for the collection and stabilization of RNA from human saliva samples. The collection devices differ in model numbers and labeling.

The ORAcollect·RNA enables the collection of a saliva specimen by an individual. The collected specimen is transported at ambient temperature in the collection tube provided with the collection device. ORAcollect·RNA collection devices are included as a component of a third party COVID-19 test manufacturer or home/self-collection kit that is developed by a manufacturer or laboratory. ORAcollect·RNA collection devices are not intended to be sold directly to patients.

The ORAcollect·RNA ORE-100 and OR-100 consists of a double ended tube cap with attached integrated sponge that collects and transfers saliva samples from the mouth into the collection tube containing the nucleic acid stabilizing liquid. Upon contacting saliva cells, the stabilizing liquid lyses cellular and nuclear membranes to release and stabilize nucleic acids (RNA). The double ended cap is used to close the tube after the sample has been collected. Instructions for use are included within the Tyvek primary packaging.

[1] While this EUA does not authorize the ORAcollect·RNA ORE-100 and ORAcollect·RNA OR-100 as standalone self-collection kits, these devices may be included as a component of an authorized or cleared self-collection kit (e.g., a kit that is authorized under its own EUA for use by an individual to collect a saliva specimen at home).

Saliva Collection Procedure

The patient delivers an oral fluid or saliva sample into the ORAcollect·RNA collection device. Using the integrated sponge connected to the tube cap, the patient is instructed to rub the sponge 10 times along the lower gums in a back and forth motion, while avoiding the teeth. This action is then repeated on the opposite side of the mouth along the lower gumline for an additional 10 times. This information is relayed via pictorials on the instructions for use inside the collection device that the patient/user is instructed to follow (See Figure 1). Holding the tube in an upright position, the patient screws the tube cap onto the collection tube containing the stabilization buffer. After the tube is capped, the patient shakes the capped tube back and forth 15 times which allows the stabilizing liquid within the collection tube to mix with the patient's collected saliva/oral fluid that has saturated the sponge. Upon contacting saliva cells, the stabilizing liquid lyses cellular and nuclear membranes to release and stabilize nucleic acids including viral RNA. The ORAcollect·RNA collection devices do not have fill-to-lines to indicate adequate sample collection. The ORAcollect·RNA collection devices were designed and validated to ensure that sufficient sample will be collected when users follow the instructions for use. The operational limits of the equivalent ORAcollect·Dx collection device was evaluated as part of K152464 and can be applied to the ORAcollect·RNA collection devices.

Figure 1. Collection Instructions for the ORAcollect·RNA ORE-100 and OR-100

REAGENTS AND MATERIALS

The ORAcollect·RNA ORE-100 and OR-100 device models consist of the following components:

Component	Material
Primary packaging	Tyvek - Polyester based extrusion laminate
Instructions for Use (IFU)	Paper
Collection tube	Translucent polypropylene vial, 5 mL tube
Double-ended tube cap	High Density Polyethylene (HDPE) Color: Blue or Red
Sponge collector	Extended handle: Polypropylene homopolymer MITT: Polyurethane foam
Stabilizing liquid components	Proprietary formula
Collection tube label (wrap around)	Polypropylene with a permanent acrylic adhesive

PRODUCT MANUFACTURING

The ORAcollect·RNA ORE-100 and OR-100 saliva collection device models have been validated using only the components referenced in this submission.

1) **Overview of Manufacturing Capabilities:**

   ORAcollect·RNA ORE-100 and OR-100 collection devices are manufactured by DNA Genotek Inc., a subsidiary of OraSure Technologies, Inc. under a Quality Management System based on 21 CFR 820 and ISO 13485:2016 [MDSAP 704862].

   - FDA Registration Number: 3003742580 [DNA Genotek Inc.]
   - Owner/Operator Number: 905496 [DNA Genotek Inc.]

2) **Ordering and Distribution:**

   ORAcollect·RNA collection devices are included as a component of third party COVID-19 test manufacturer or laboratory developed self-collection kits. ORAcollect·RNA saliva collection devices themselves are not intended to be sold directly to patients.

   The ordering of the ORAcollect·RNA saliva collection device (ORE-100 or OR-100) will be completed via a typical ordering procedure following the DNA Genotek sales process. When order completion is finalized, DNA Genotek will ship devices in accordance with the signed sales agreement. ORAcollect·RNA collection devices will be distributed for use in COVID-19 testing by the COVID-19 test kit manufacturers, collection kit manufacturers without a SARS-CoV-2 assay, or laboratories providing saliva self-collection kits.

COLLECTION DEVICE STABILITY

1) **Pre-Collection Shelf-Life Stability:**

   a. Shelf-Life Stability – Unopened Kit

      Stability testing was completed in accordance with FDA recognized CLSI Standard EP25 – *Evaluation of stability of in vitro diagnostics, February 2013 edition.*

      Shelf-life stability of the ORAcollect·RNA saliva collection devices (OR-100 and ORE-100) was determined using a combination or real-time testing and data from the equivalent ORAcollect·Dx collection device which was cleared under K152464 (OCD-100 and ORE-100). ORAcollect·RNA saliva collection devices contain the same physical components and have identical instructions for use as the ORAcollect·Dx family of devices[2]. ORAcollect·Dx and ORAcollect·RNA differ in their labeling and Intended Uses. Nonetheless, ORAcollect·Dx OCD-100 testing data were used as a reference to evaluate the physical performance of

[2] The ORAcollect·Dx (OCD-100 and ORE-100) requires inversion of the collected sample with the stabilization buffer 10 times. The ORAcollect·RNA (OR-100 and ORE-100) requires inversion of the collected sample with the stabilization buffer 15 times.

unopened kits containing either the ORAcollect·RNA OR-100 or ORE-100 collection device.

i. Ambient Storage Stability (Pre-Collection) Summary
As demonstrated in K152464, ORAcollect·Dx collection devices were aged for 24 months at ambient (15 – 25°C) conditions. 100% of the devices met the acceptance criteria for all chemistry endpoints. Results demonstrated that there was no degradation in the chemical reagents or evaporation of the components within the device over 24 months when stored at room temperature.

ii. Real-Time Stability (Pre-Collection) Testing Summary
In addition to leveraging data from K152464, real-time shelf-life testing using the ORAcollect·RNA devices is ongoing. Representative devices were subjected to the recommended storage conditions of 15 – 25°C. The shelf-life testing data to date supports a pre-collection storage temperature of 15°C – 25°C for 24 months for the ORAcollect·RNA devices as the chemistry and performance acceptance criteria were obtained. Real-time evaporation testing using the ORAcollect·RNA devices is ongoing.

iii. Summary of Shipping (In Transport) Studies
Data from the FDA cleared ORAcollect·Dx OCD-100 was used to support the majority of the shipping stability claims for the OR-100 and ORE-100 devices. The chemistry and volume of the stabilizing liquid within OCD-100 and ORE-100 collection devices was assessed after being subjected to freeze/thaw cycles that could be experienced during transport. Drop testing and pressure changes were also evaluated for clearance of the OCD-100. In all devices tested (both OCD-100 and ORE-100), there was no impact on the chemistry or volume of stabilizing liquid after undergoing various simulated shipping conditions.

2) Sample Volume Tolerance Testing and Human Factors Assessment:
To evaluate the potential effect on sampling variability due to use-collection error, a usability and human factors assessment was completed for the ORAcollect·Dx and can be applied to the ORAcollect·RNA since the collection instructions for these devices are identical[2]. The operational limits of the ORAcollect·Dx was previously evaluated as part of K152464. This study tested the effect of incorrect collection methods (e.g., under-collection, over-collection) and the effect of collection from incorrect sites (e.g., upper/lower gums, cheeks, tongue).

a. Incorrect Collection Methods (Differences in Saliva Sample Volume)
As presented in the decision summary for K152464, a total of 10 donors were asked to collect 5 saliva samples using the following methods with the OCD-100 device:

- Recommended; 10 sponge actions per each lower gum on each side of the mouth for a total of 20 sponge actions
- Over-collection; 10 sponge actions per each upper and lower gums on each side of the mouth for a total of 40 sponge actions
- Under-collection by 50%; 5 sponge actions per each lower gum for a total of 10 sponge actions
- Under-collection by 75%; 5 sponge actions on a single lower gum for a total of 5 sponge actions
- No motion; sponge was placed in lower gutter region for 10 seconds on each side of the mouth with no action

All acceptance criteria, pre-defined in the study protocol, were met successfully with the exception of one specimen from the "no motion" group indicating that the OCD-100 and essentially the OR-100/ORE-100 can accept a wide range of saliva input volumes and yield acceptable results with downstream testing.

b. Incorrect Anatomic Collection Sites

As summarized in the decision summary for K152464, a total of 10 donors collected 4 saliva samples by one of the following methods with the OCD-100 device:

- Recommended; 10 sponge actions per each lower gum on each side of the mouth for a total of 20 sponge actions
- Cheek; 10 sponge actions per inside of the cheek on each side of the mouth
- Teeth; 10 sponge actions on the lower teeth on each side of the mouth
- Tongue; 10 sponge actions on each side of the top of the tongue

All acceptance criteria, pre-defined in the study protocol, were met successfully with the exception of one specimen of which the cheek was swabbed indicating that the OCD-100 and essentially the OR-100/ORE-100 can accept samples collected from other sites besides the intended oral gutters and yield acceptable results with downstream testing.

c. Dry Mouth

Thirteen donors with dry mouth according to answers of the Xerostomia Inventory questionnaire were evaluated. This study demonstrated that even individuals with diagnosed dry mouth condition (majority of specimens; 11/12) can still yield sufficient saliva collected with the ORAcollect·Dx device for downstream testing.

PERFORMANCE EVALUATION

1) Specimen Stability Study Post-Collection of Saliva:

a. Simulated Shipping Study with the OMNIgene·ORAL OM-505 Saliva Collection Device

The stabilizing liquid composition of the ORAcollect·RNA OR-100 and ORE-100 device models is identical to the OMNIgene·ORAL saliva collection devices (OM-505 and OME-505) that have received EUA authorization. The starting concentrations of the stabilizing liquid reagents does differ between the ORAcollect·RNA and the OMNIgene·ORAL saliva collection devices; however, the final concentrations of each component once saliva is collected are identical amongst the devices.

The sample type for the OM-505/OME-505 is 1 mL of raw saliva, which is collected via spitting into the device at an equal volume to the stabilizing liquid that is located within the cap of the funnel and is released upon closure of the funnel cap post-collection. The sample type for the OR-100 is saliva that is collected via a sponge that absorbs residual saliva from the oral gutter regions of the mouth and contributes raw saliva to the stabilizing liquid of the OR-100/ORE-100 that is within the collection tube. Therefore, the dilution chemistry of the OM-505 with an equal volume of saliva to stabilization buffer results in final chemical concentrations that are equivalent to those of OR-100/ORE-100 samples, since OR-100/ORE-100 concentrations are half of those in the OM-505. Due to the equivalence of final chemical concentrations of saliva collected in the OM-505 and saliva collected with the OR-100/ORE-100, stabilization of nucleic acids such as SARS-CoV-2 RNA is expected to be equivalent between the OM-505 and OR-100/ORE-100.

Based upon the stability data presented for the authorization of the OMNIgene·ORAL OM-505/OME-505, saliva containing SARS-CoV-2 RNA is stable when exposed to a broad range of temperature conditions. The data support the use of the OMNIgene·ORAL saliva collection devices (both OM-505 and OME-505) as well as the ORAcollect·RNA (both ORE-100 and OR-100) for transport and storage of saliva specimens at room temperature for 72 hours. Please refer to the EUA summary for the OMNIgene·ORAL saliva collection devices for additional details on the simulated shipping stability studies that were completed to validate this claim.

2) Self-Collection Validation/Usability Study:

A usability study involving 100 naïve users was previously conducted to assess user comprehension of the ORAcollect·Dx collection instructions. The ORAcollect·RNA OR-100 and ORE-100 collection devices contain the same physical components and collection procedure as the ORAcollect·Dx family of devices; therefore, testing of the ORAcollect·Dx is referenced to fulfill usability performance requirements. Please see

K152464 for a more detailed usability and human factors evaluation that can be applied to the ORAcollect·RNA saliva collection devices.

3) **Clinical Evaluation; Paired NP Swab and Saliva Clinical Study:**

The following supportive performance data were provided by Quadrant Biosciences Inc for DNA Genotek's EUA submission. A right of reference from Quadrant Biosciences Inc was provided to DNA Genotek to leverage the clinical study data that evaluated the ORAcollect·RNA OR-100 collection device. Please refer to the EUA summary for the Clarifi COVID-19 Test Kit for more detailed information on assay validation using saliva collected with the OR-100 device.

A total of 63 Clarifi COVID-19 saliva swab specimens were collected within 0-5 days following collection of the comparative nasopharyngeal swabs (32 negative, 31 positive). Clinical nasopharyngeal specimen results were obtained from an EUA authorized SARS-CoV-2 RT-PCR assay. Saliva samples were processed using the Clarifi COVID-19 Test Kit as per the Instructions for Use. The Clarifi COVID-19 Test Kit resulted in a positive agreement of 100% (31/31) and a negative agreement of 100% (32/32) as shown in Table 1 below.

Table 1. Summary of Qualitative Results Obtained from Parallel Testing of Nasopharyngeal Swab Samples Tested with an EUA Authorized Assay and Saliva Collected Using the OR-100

		EUA Authorized Comparator (Nasopharyngeal Swab)		
		Positive	**Negative**	**Total**
Clarifi COVID-19 Test Kit (Saliva Collected using the OR-100)	**Positive**	31	0	31
	Negative	0	32	32
	Total	31	32	63
Positive Percent Agreement		100% (31/31); 88.98-100.00%[1]		
Negative Percent Agreement		100% (32/32); 74.12-100.00%[1]		

[1]Two-sided 95% score confidence intervals

WARNINGS:

- This sample collection device has not been FDA cleared or approved.
- This sample collection device has been authorized by FDA under an EUA.
- This sample collection device has been authorized only to collect, stabilize, and maintain during transport, saliva specimens suspected of containing SARS-CoV-2 ribonucleic acid (RNA), not for any other viruses or pathogens; and.
- This sample collection device is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of medical devices during the COVID-19 outbreak under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the authorization is terminated or revoked sooner.