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LABORATORY REPORT

PATIENT	SPECIMEN	PHYSICIAN
Name: **RadTox Report** 4385 HOPYARD RD, PLEASANTON, CA 94588 Phone: (510) 878-6662 Accession #: **2302300001**	Specimen Type: **BLOOD** Received Date: **06/07/23 10:17** Reported Date: **06/11/23 15:07**	Name: **DIACARTA** **CHUANYI MARK LU** Address: **4385 HOPYARD RD,** **PLEASANTON, CA 94588** Phone: **(510) 878-6662**

RadTox™ Test Report

Description	Time Point	Date of Collection	Date of Testing	Value
RadTox-Baseline	**T0**	**06/05/2023**	**06/11/2023**	**2.44**
RadTox - Follow up	**T1**	**06/05/2023**	**06/11/2023**	**1.09**

T0 represents cfDNA measurement prior the start of the treatment.
T1 represents cfDNA measurement 24-48 hours after the radiation therapy or at a chosen time point after radiation therapy or other systemic therapies.
Increase in the level of cfDNA is due to treatment introduced cell death in the first 24-48 hours after radiation.
The difference betweeen T1 and T0 represents the change in cfDNA level from baseline to followup.

Assay Performance, Reference Interval, and Reportable Range

For QuantiDNA™ Direct cfDNA Test, the lower limit of detection (LoD) was calculated as 0.023 ng/mL, the reference interval range is 1.79 - 21.92 ng/mL, and the clinically reportable range is 1.56 - 217 ng/mL

Assay Description

cfDNA is a measure of systemically integrated cell turnover and death and can vary with age, body mass, medical interventions and health status. Increase in the level of cfDNA is due to treatment introduced cell death either from the cancer and/or normal cells, depending on the treatment types. Different individuals may respond to therapy differently due to the physical conditions or genetic factors, and their cfDNA measurement can also be different. The amount of cfDNA and the changes has been used as biomarker for treatment monitoring, prognosis evaluation, and tumor burden assessment.

The test results should be reviewed by the physician to obtain further health care advice and develop a personalized treatment plan. The physician can use this information to customize care, which may include but not limited to stay on current treatment, adjustment of dosing, field and frequency, switch to a different treatment, increased surveillance and monitoring, additional medication, and other necessary interventions. Any adjustment of the treatment plan needs to be combined with other clinical indications.

Indication for Use

The RadTox™ test is a molecular Laboratory Developed Test (LDT) for the quantitative detection of cell-free DNA (cfDNA) in the plasma of peripheral blood and monitoring the level of changes during systemic therapy, which may include but not limited to radiation therapy, chemotherapy, immunotherapy, other anti-cancer therapies, and any combination of thereof.

Assay Methodology

The RadTox™ test is based on DiaCarta's proprietary QuantiDNA™ Direct cfDNA Test methodology. It directly measures the concentration of circulating cfDNA in plasma, without the steps of lysis, extraction, purification and quantification of nucleic acids, commonly used in the conventional methods. It uses branched DNA (bDNA) technology to amplify chemical signal generated in the presence of target cfDNA sequence without amplifying the analyte/target itself. It involves three main steps: target capture, DNA hybridization, and detection by fluorescence. The fluorescence signal detected by the Luminex MAGPIX is directly related to the amount of cfDNA in the plasma sample.

Disclaimer

RadTox™ Test is performed at the DiaCarta Clinical Laboratory as a Laboratory Developed Test (LDT). It was developed by DiaCarta with performance characteristics determined by DiaCarta, based on clinical studies on radiation toxicity assessment on prostate cancer patients. The test is not cleared or approved by the U.S. Food and Drug Administration (FDA). This test has been validated at the DiaCarta Clinical Laboratory pursuant to CLIA regulations and can be used for clinical purposes. The test results may be used along with other therapies and cancer types, but the result interpretation has not been validated and should be used with caution by medical professionals. DiaCarta is not responsible for the clinical decisions made based on this test. The DiaCarta Clinical laboratory is regulated under CLIA regulations and is qualified to perform high-complexity testing.

References

1. Lockney NA, et al. Circulating Cell-Free DNA Correlates with Body Integral Dose and Radiation Modality in Prostate Cancer. Int J Part Ther. 2020 Sep 15;7(2):21-30. doi: 10.14338/IJPT-20-00033.1

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2. Zhou X, et al. Kinetics of plasma cfDNA predicts clinical response in non-small cell lung cancer patients. Sci Rep. 2021 Apr 7; 11(1):7633. doi: 10.1038/s41598-021-85797-z
3. Zhong Y, et al. Plasma cfDNA as a Potential Biomarker to Evaluate the Efficacy of Chemotherapy in Gastric Cancer. Cancer Manag Res. 2020;12:3099-3106. doi.org/10.2147/CMAR.S243320
4. Fernandez-Garcia D, et al. Plasma cell-free DNA (cfDNA) as a predictive and prognostic marker in patients with metastatic breast cancer. Breast Cancer Res. 2019 Dec 19;21(1):149. doi: 10.1186/s13058-019-1235-8
5. Valpione S, et al. Plasma total cell-free DNA (cfDNA) is a surrogate biomarker for tumour burden and a prognostic biomarker for survival in metastatic melanoma patients. European Journal of Cancer. 2018 Volume 88, Pages 1-9. doi: 10.1016/j.ejca.2017.10.029
6. Unpublished data: in the ongoing clinical trial, NCT04580667, (NCI Contract# 75N91019C00004), among prostate cancer patients 50% had baseline cfDNA concentrations between 11.9 to 26.4 ng/mL, with the highest decile above 54.5 ng/mL and the lowest decile below 8 ng/mL.