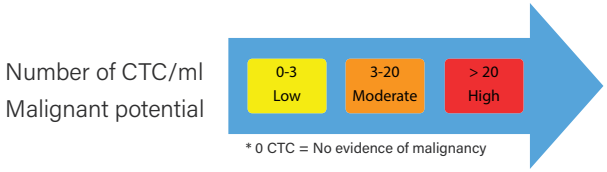
The ISET®-CTC test

ISET® (Isolation by Size of Epithelial Tumour cells) - CTC (Circulating Tumour Cells) is a blood test that may be helpful:

- for the early detection of cancer risk
- for assessment of patients with all types of cancer
- for the metastatic potential of cancer
- for monitoring cancer therapy (treatment efficacy)

Recent studies indicate that the CTC count (number of CTC) can correspond to the risk of malignancy or cancer stage.

Generally, *the higher the CTC count, the higher the risk.*



The count and type of CTC (single cells or clusters) may provide guidance for treatment.

The ISET®-CTC test uses cytopathology (microscopy) to distinguish between benign and malignant CTC, atypical cells, inflammation, pathogenic organisms and other rare cells.

Preliminary evidence indicates that the CTC count may be reduced with integrative therapies, such as nutritional and herbal medicine. Ask your healthcare practitioner for further information.

NIIM is the first institute in Australia to have the ISET®-CTC technology available by Rarecells France. www.rarecells.com

Rarecells

NIIM NATIONAL INSTITUTE OF INTEGRATIVE MEDICINE

For more information visit
www.niim.com.au/clinic/ctc

NIIM conducts the ISET ®-CTC test as part of a clinical study. This study has been approved by an NHMRC registered ethics committee, and is registered on the Australian New Zealand Clinical Trials Registry.

To take the ISET®-CTC test

BY REFERRAL ONLY
Please complete the ISET®-CTC request form available online at **www.niim.com.au/clinic/ctc**

NIIM Clinic

Our clinics in Melbourne, Gold Coast and Sydney provide an exemplary team of integrative medical doctors, allied and complementary health practitioners.

Our clinicians utilise innovative therapies together with the latest in screening and treatment tools, for the ultimate in healthcare.

Practitioner profiles, including professional background and specialites, treatment options and information on all services can be viewed online at:
www.niim.com.au/clinic
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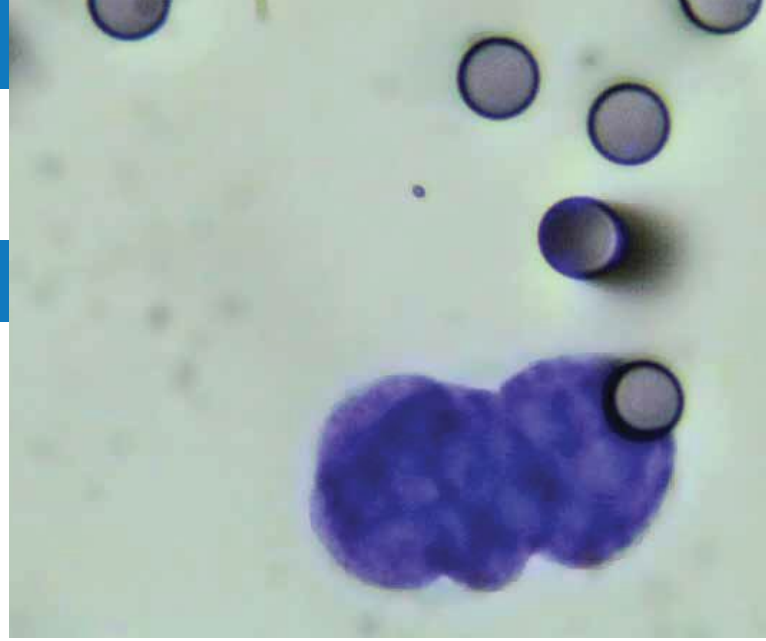

NIIM NATIONAL INSTITUTE OF INTEGRATIVE MEDICINE

ISET - CTC

Sensitive Screening tests for Circulating Tumour Cells

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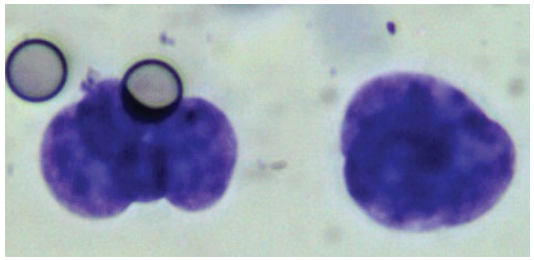
The ISET®-CTC test

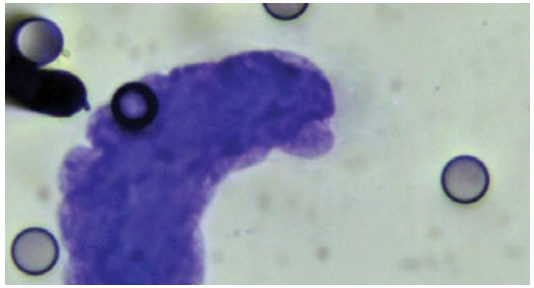
The ISET®-CTC test:

- is based on a simple blood test for patients. Once the blood is drawn, it is processed by a special device to isolate the CTCs.
- is so sensitive that it can detect one single CTC in 10 milliliters of blood, equivalent to one CTC mixed with several billion blood cells.
- can be used for all types of cancers. Intact CTC's are extracted from blood without loss, stained and identified and counted by cytopathology.

Cytopathology is used in diagnosing cancer by the visual identification of tumour cells. Cytopathology has been validated and used to help diagnose cancer for over 150 years.

Stained cancer cells on filter





References:

1. Ilie M, Hofman V, Long-Mira E, Selva E, Vignaud J-M, Padovani B, et al. "Sentinel" Circulating Tumor Cells Allow Early Diagnosis of Lung Cancer in Patients with Chronic Obstructive Pulmonary Disease. Plos One 2014;9(10):e111597.2. Cristofanilli M, Budd GT, Ellis MJ, Stopeck A, Matera J, Miller MC, et al. Circulating tumor cells, disease progression, and survival in metastatic breast cancer. N Engl J Med 2004;351(8):781-91.
3. Hofman V, Ilie MI, Long E, Selva E, Bonnetaud C, Molina T, et al. Detection of circulating tumor cells as a prognostic factor in patients undergoing radical surgery for non-small-cell lung carcinoma; comparison of the efficacy of the CellSearch Assay™ and the isolation by size of epithelial tumor cell method. Int J Cancer 2011;129(7):1651-60.
4. Vona G, Sabile A, Louha M, Sitruk V, Romana S, Schutze K, et al. Isolation by size of epithelial tumor cells : a new method for the immunomorphological and molecular characterization of circulating tumor cells. Am J Pathol 2000;156(1):57-63
5. Hofman VJ, Ilie MI, Bonnetaud C, Selva E, Long E, Molina T, et al. Cytopathologic detection of circulating tumor cells using the isolation by size of epithelial tumor cell method: promises and pitfalls. Am J Clin Pathol 2011;135(1):146-56.
6. Harouaka RA et al. Circulating Tumour Cell enrichment based on physical properties. J Lab Autom 2013;18(6),1-21.
7. Paterlini–Brechot P. Circulating Tumour Cells: Who is the Killer? Cancer Microenviron 2014;7,161-176.
8. Hong Y, Fang F, Zhang Q. CTC clusters: what we know and what we expect (review). Int J Oncol 2016; 49: 2206-2216.

How does CTC analysis work?

10 ml of blood (EDTA)
Diluted with buffer

↓

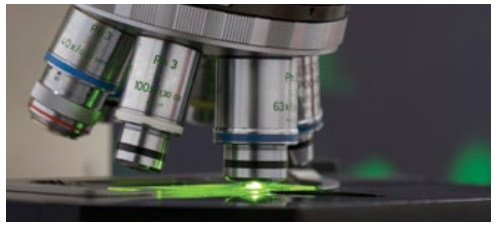
Incubation

↓

Filtration

↓

Filter with 10 spots
1 mL of filtered blood per spot



CTC cells are counted and analysed

What is CTC analysis?

- Circulating Tumour Cells (CTC) are associated with early carcinogenesis/malignant potential [1]
- CTC may provide a biomarker for cancer prognosis and treatment effectiveness
- CTC increase is associated with cancer progression [2]
- CTC decrease is associated with cancer containment or remission [3]
- Early detection CTC screening may be helpful for patients with higher risk of malignancy, e.g. smoking, family history, HRT, >50 years
- Several technologies have been developed to identify CTC, including the isolation by Size of Epithelial Tumour (ISET) which uses filtration and analysis by microscopy using standard histo-pathological criteria, validated in several studies, and provides high specificity, and high sensitivity.[4,5]

Some FACTS about the ISET®-CTC test

1. The ISET®-CTC tests can detect Circulating Tumour Cells (CTC) in all cancer types, including solid tumours and blood type cancers.[4,5]
2. The ISET®-CTC test can detect small cell cancers. ISET®-CTC (Isolation of Epithelial Tumour Cells by Size) testing by microfiltration can detect cancer cells of all sizes. Cancer cells usually are larger than 8 microns (the ISET filter hole size), including solid tumour cells of 11.7-23.8 microns, small-cell type cancers (e.g. small cell lung carcinoma of 7.2-10 microns) and blood type cancers (e.g. leukemia cells of 8.9-15.3 microns). [6]
3. The ISET®-CTC can detect Circulating Tumour Cells (CTC) independent of the presence of Epithelial Cell Adhesion Molecule (EpCAM) markers used in other CTC tests. [7]
   - Some tumour cells do not have EpCAM markers, e.g. blood type tumours.
   - Tumour cells consistently undergo change and may lose EpCAM markers over time.
4. The ISET®-CTC testing can distinguish between malignant Circulating Tumour Cells (CTC) and benign Circulating Epithelial Cells (CEC). [4,5]