Ctc-finder® a reagent-based kit to sort, count, and recover culturable circulating tumor cells (ctc) from human whole blood with very high purity, sensitivity and specificity

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Abstract

Detecting Circulating Tumour Cell (CTC) in human whole blood is still a challenge to overcome. Most of the current solutions are using EpCAM as a biomarker for CTC sorting, because of its overexpression on their surface, compared to regular blood cells. Through such methods, other antibodies such as anti-CD45 and Pan-CK are used to confirm CTC features. Although, most of the aggressive CTC exhibit a hybrid epithelial/mesenchymal phenotype as they operate this transition to colonize the blood. More recently, other technologies have been using microfluidics and size-based parameters to concentrate CTC in a chip or on a filter, postulating CTC are larger (>7-10 µm) than regular blood cells. However, regular blood cells may overlap this range, whereas CTC exhibit deformable capacities that may bypass such systems. To more efficiently target CTC, Oncosema has developed a liquid biopsy detection kit for whole blood, called “CTC-Finder®” in order to isolate, count and keep CTC suitable for downstream analysis. Oncosema’s Intellectual Property is based on the use of recombinant antibodies which have respective specific affinities towards Tumor Associated Carbohydrate Antigens (TACAs), exclusively expressed at the surface of the CTC. Such antibodies, grafted in a multiplexed way on paramagnetic beads, allow the detection of CTC with extremely high analytical sensitivity (>95%) and specificity (>95%) on human blood samples. Thanks to these unprecedented performances, our kit can detect as low as 2-5 CTC in 7.5 mL whole blood, with less than 50 regular cells. CTC attached to the CTC-Finder® magnetic beads could be efficiently (>95%) released from the beads, using a proprietary elution solution which keeps the cells alive, able to generate spheroids in 3D culture. Downstream analyses made on very pure and live CTC could thus be easily implemented on samples from all stages of cancers, for a personalised medicine. So far, major cancers have been successfully evaluated in vitro and ex vivo, showing that cells from epithelial/mesenchymal status could be detected. CTC-Finder® is a cost-effective and very efficient tool to monitor cancer spreading, which allows molecular and cellular characterization of CTC during disease treatment.

Do you have any conflicts of interest?

Yes, I have a conflict of interest.

Salary and co-owner of Oncosema