

The Use of Transferrin as a Potential Target for Cancer Cell Identification



Hermella Andarge, Yun Zhou and Dimitri Pappas

Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, TX, 79409

Introduction

Cancer

- Affects more than 10 million people per year

Capture Efficiency

- Suspended cells can always be maintained at a high density in a flask, adherent cells are limited by the flask surface area.

Flow Cytometry

- Developed for cell analysis and provides high cell counts

Approaches

Flow Cytometry

- Allows quantitative analysis of cancer cells
- Analysis for the number of antibody binding sites on a cell or particle
- Detection of antigen under or overexpression

Methods

Centrifuge

- Separation of supernatant from cell pellet
- Used to wash cells during staining with antibodies

Clinical samples

- Patients enrolled from UMC
- Blood Draws within 24 and 48 hours

Results

Capture Ability of Transferrin and CD 71

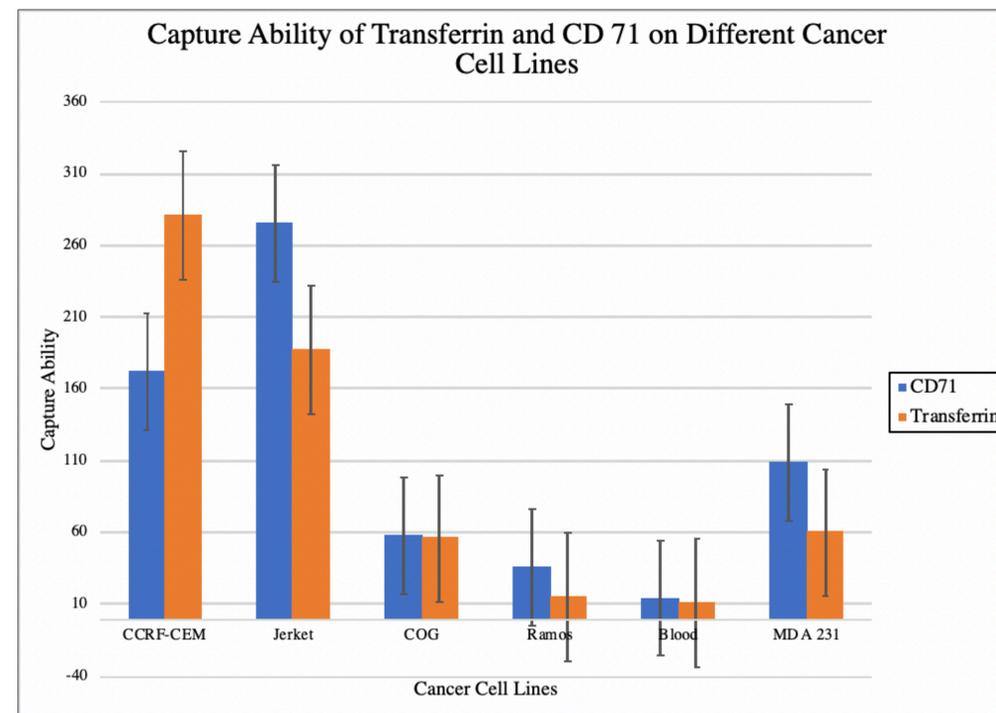


Fig. 1 Capture ability of Transferrin and CD71 on different cell lines. Transferrin is more successful on some cell lines and not on others. Efficiency of capture is not consistent across all cell lines.

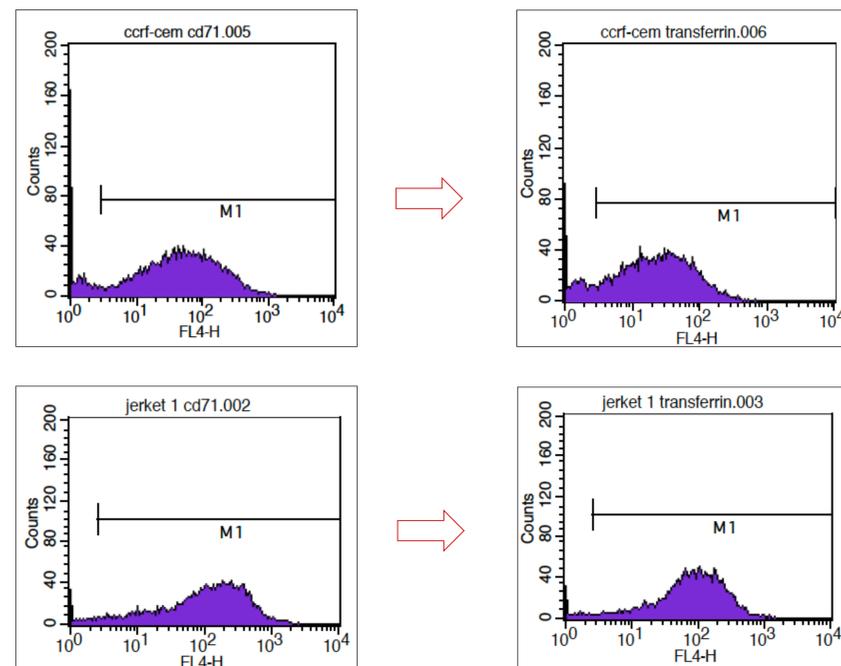


Fig. 2 Capture ability of CD 71 and Transferrin for CCRF-CEM and Jerket

Difference in capture ability depicted in the graph can be seen in the histogram of both CCRF-CEM and Jerket. CD71 is more effective in CCRF-CEM while Transferrin is more effective on Jerket.

Conclusion

- Transferrin is more effective in capturing CCRF-CEM but CD71 is more effective in most of the other cell lines.
- There is statistical significance in CCRF-CEM capture with Transferrin
- Many of the cell lines have comparable capture efficiency with both CD71 and Transferrin.

Future Directions

- Comparison of cell capture on nanoparticle chips with both antibodies
- More flowcytometry data to see consistency in capture ability across cell lines
- Optimization of experiments
- Reduce time of assay

References and Acknowledgement

Pappas, D., *Practical cell analysis*. John Wiley & Sons: 2010.

Research Advisor:

Dr. Dimitri Pappas

Group Members:

Yun Zhou, Bhagya Wickramaratne

The Texas Tech Department of Chemistry and Biochemistry

The Texas Tech Honors College

The CH Foundation and CPRIT for their support of this work.

