



Particle Enhanced Ultrasonic Cell Lysis

Enabling rapid intracellular component identification, quantification or isolation

Background

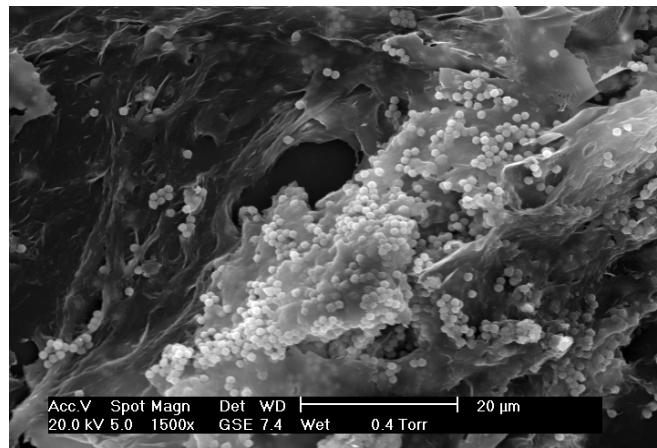
Prior to the investigation of intracellular proteins and organelles cells need to be disrupted or lysed to release these components for study. Sonication is one method commonly used by researchers to disrupt cell architecture. We have developed a novel cell lysis apparatus and methodology which enhances the release of intracellular protein.

This technology employs ultrasound in the presence of micron sized particles to improve cell lysis. Adding micron sized particles to the sample during sonication enhances the amount of protein released. Varying degrees of cell lysis can be achieved by adjusting one or more of the following parameters: the amount of ultrasound energy imparted, the type of particle used, the concentration of particles or the size of particle used. Controlling the procedure enables preferential release of cell components of interest, for example organelles can be released with gentle disruption or higher levels of protein can be obtained if a more vigorous lysis is applied.

Using paramagnetic particles coated with a suitable binding agent has enabled us to integrate the lysis process with a magneto-immunoassay. This enables the rapid identification, quantification or isolation of proteins or cell organelles of interest.

Benefits and Applications

- Increased intracellular protein release
- Enables rapid cell lysis
- Degree of cell disruption can be controlled to suit requirements
- Using coated paramagnetic particles enables an integrated lysis/quantitative immunoassay procedure for intracellular component of interest.
- Using coated particles as labels allows isolation of cell organelles



SEM image showing Jurkat cells lysed by sonication in presence of 1µm particles

The Opportunity

University of West of the England, Bristol has filed a patent application (PCT/GB2008/000993) relating to this technology and is now seeking industrial collaborators for technology development and/or licensing.

For more information please contact
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