Bioanalysis ZONE

BioAgilytix

The use of ELISpot assays for evaluating the safety of therapeutic drugs

After dosing with a drug, patient immune systems can mount anti-drug responses, which include humoral and cellular immunogenicity.

Humoral immunogenicity is the production of anti-drug antibodies after activation of B cells.

Cellular immunogenicity is the activation of anti-drug T cells. These cells may recognize other cells in the body that have taken up the drug and kill them through a variety of mechanisms.

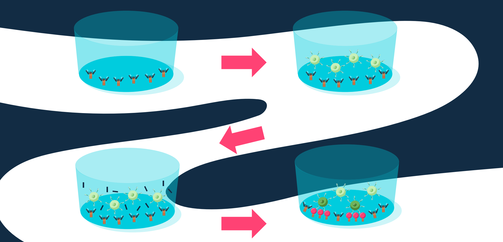
Evaluating the safety of drugs such as cell and gene therapeutics includes testing for cellular immunogenicity. This can be performed using ELISpot.

ELISpot, **E**nzyme **L**inked **I**mmunosorbent **Spot** **assay**, is a method that measures the number of cytokine-producing T cells that are activated in response to stimulation with peptides derived from the therapeutic being tested.

ELISpot assay workflow:

1. Plates have a membrane coated with antibodies to capture cytokines

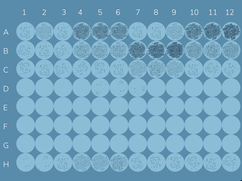
2. Patient immune cells (PBMCs) are added to the wells



3. Drug-specific peptides are added to the wells

4. Antigen stimulated cells produce cytokines that bind to the plate

By isolating patient lymphocytes from the blood at different times post-treatment and incubating them with the therapeutic peptides in vitro, the cellular immunogenicity of the drug can be measured.



Currently, there are no clear guidelines from health authorities on the bioanalytical design and validation of these assays in a regulated setting.

Some of the common areas for concern include:

- When should the assay be validated?
- During validation, what parameters should be tested?
- What controls should be included in the assay?
- How should the peptides be designed and produced?
- What timepoints should be evaluated in the ELISpot assay?
- How should the data be reported?

By leveraging common practices in the industry and publications from working groups, some of these questions can be resolved. However, there are still knowledge gaps that should be further discussed with input from regulatory bodies as the ELISpot assay becomes more common in a regulatory setting.

BioAgilytix offers ELISpot assays at multiple global locations. With the ability to qualify and validate assays for nonregulated or regulated work, BioAgilytix's ELISpot platform provides robust data for monitoring cell-mediated immune responses to biologics, cell therapies, and gene therapies during clinical and preclinical testing. Speak to a scientist about your ELISpot project at https://www.bioagilytix.com/speak-to-scientist/

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