

NIR-FLIVO 690 Tracer Assay Kit

NIR-FLIVO 690 Tracer In vivo Assay

CATALOG #
AAA52768

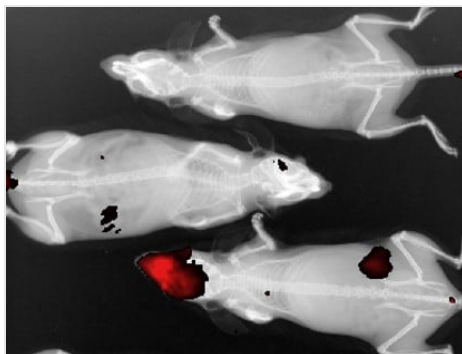
PRODUCT SYNONYMS

NIR-FLIVO 690 Tracer; NIR-FLIVO 690 Tracer In vivo Assay; NIR-FLIVO 690 Tracer assay kit

PRODUCT SPECIFICATIONS

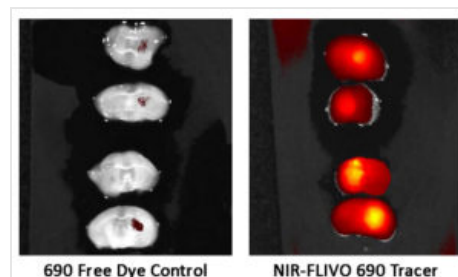
Preparation and Storage	-20 degree C
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IMAGES



Application Data

IN VIVO APOPTOSIS IN MOUSE BRAIN. Here are whole animal images using FLIVO to study brain infections. Image take with a Carestream In Vivo FX PRO imager. Adult wild-type Balb/c mice were either given a control (#1&2 top and middle) or intranasal inoculation with the HSV-1 virus (#3 bottom), which is absorbed thru the epithelium and is known to induce apoptosis in the brain. 7 days later, at the peak of infection, the mice were injected IV in the tail vein without any reagent (#1) or with NIR-690 (#2 and #3 middle and bottom), and imaged 4 hours later. We can see strong caspase activity located in the brain of the bottom animal treated with HSV-1 and injected with NIR690 (#3 bottom). Minimal signal was detected in the liver region of both mice injected with NIR690 (#2 and #3) as the liver is the route of clearance for FLIVO tracers. There is no signal in the uninfected control (#1 top), therefore #2 (middle) reveals background staining.



Application Data

Brain abscesses were induced in mice following the intracerebral inoculation of live *Staphylococcus aureus*. Animals received intravenous injections of NIR-FLIVO 690 Tracer or NIR-FLIVO 690 Free Dye Control at 17 hours post-infection, whereupon signals were acquired 1 hour later from brain tissues ex vivo using an IVIS Spectrum (Caliper Life Sciences). Strong caspase activity was associated with brain abscesses following administration of the NIR-FLIVO 690 Tracer (right image), whereas minimal signal was detected in animals injected with the NIR-FLIVO 690 Free Dye Control (left image).

ADDITIONAL INFORMATION

Related Product Information for NIR-FLIVO 690 Tracer assay kit

Background/Introduction: FLIVO® (FLuorescence in vIVO) is a powerful method for assessing caspase activity in vivo. Like our FLICA® probes^{1,2}, but optimized for whole live animal imaging, FLIVO Tracers are non-cytotoxic fluorescent inhibitors of caspases. near-infrared (NIR)-FLIVO poly caspase tracers contains the preferred binding sequence for most caspases, Val-Ala-Asp (VAD). This preferred poly caspase tripeptide binding sequence is labeled at the amino terminus end with *Dylight® 690 or 747 NIR label and linked at the carboxyl end to a fluoromethyl ketone (FMK) reactive entity. Apoptosis is an evolutionarily conserved process of programmed cell suicide. It is centered on a cascade of proteolytic enzymes called caspases that are triggered in response to pro-apoptotic signals. Like most other proteases, caspases are synthesized as pro-form precursors that undergo proteolytic maturation, either autocatalytically or in a cascade by enzymes with similar specificity³. Active caspase enzymes consist of two large (~20 kD) and two small (~10 kD) subunits that non-covalently associate to form a two heterodimer, tetrameric active caspase⁴⁻⁶. Once activated, caspases cleave protein substrates leading to the eventual disassembly of the cell. Caspases have been identified in organisms ranging from *C. elegans* to humans. Mammalian caspases play distinct roles in both apoptosis and inflammation. FLIVO kits provide a simple yet accurate method to detect caspase activity in vivo. To label cells containing elevated levels of active caspases, inject the FLIVO Tracer intravenously and let it circulate. Because the FLIVO Tracer is cell-permeant, it readily diffuses in and out of all cells it encounters as it circulates throughout the body. If there are active caspase enzymes inside a cell, FLIVO will form an irreversible covalent bond with a reactive cysteine on the large subunit of the caspase heterodimer, thereby inhibiting further enzymatic activity. The bound FLIVO Tracer will remain inside the cell if the cell membrane is intact. Any unbound FLIVO is removed from the circulation of the animal in about an hour. The remaining NIR fluorescent signal in the tissue is a direct measure of caspase activity that occurred at the time the reagent was injected. Apoptotic cells will retain a higher concentration of FLIVO Tracer and fluoresce brighter than non-apoptotic cells. There is no interference from pro-caspases or inactive forms of the enzyme. If the treatment is causing cell death via apoptosis, apoptotic cells will have an elevated level of caspase activity relative to non-apoptotic or negative control cells and fluoresce near-infrared with FLIVO. NIR-FLIVO Tracers are used in conjunction with NIR-FLIVO Free Dye Control Assays (sold separately). The NIR-FLIVO Free Dye Control Assay uses the NIR fluorescent dye molecule. When injected, both the Free Dye Control and the Tracer reagents will generate a fluorescent signal, but only the Tracer should bind to active caspases and remain inside an apoptotic cell. The fluorescent signal generated from the Free Dye Control reveals where the fluorescent reagent may have become trapped inside the cell, tissues, or body of the animal without specifically binding with an active caspase. In the context of the overall experiment, this base level of fluorescence is considered background noise compared with the signal generated in animals that were injected with the NIR-FLIVO Tracer. An initial experiment may be necessary to determine when and how much NIR-FLIVO to inject based on the size of the animal, tissue type, experimental conditions, rate of apoptosis, and method of analysis. Generally, the longer FLIVO circulates, the lower the non-specific background signal; however, some apoptotic cells may be lost over time. After 60 minutes, most of the unbound NIR-FLIVO Tracer or Free Dye Control will have cleared the bloodstream. The bound NIR-FLIVO Tracer will remain inside an apoptotic cell and generate a positive signal if the cell membrane is still intact. Once the animals have been injected with FLIVO, they are ready for analysis and no further staining is necessary. Because FLIVO is a direct stain, it eliminates any false positives that may arise from manipulation of the tissue. This gives a true representation of the induction of apoptosis in vivo as a result of the experimental condition. Live animals may be analyzed in a whole animal imager, and /or tissues may be prepared and further analyzed by histological methods. Tissues labeled with FLIVO can be counter-stained with other reagents such as DAPI, and fixed or frozen for future analysis. The fluorescence intensity can be quantified by excising the tissue and analyzing cells with a flow cytometer. NIR-FLIVO 690 Tracer optimally excites at 690 nm and has a peak emission at 709 nm. NIR-FLIVO 747 Tracer optimally excites at 747 nm and has a peak emission at 776 nm.

Product Categories/Family for NIR-FLIVO 690 Tracer assay kit

Cell Viability Assays; Apoptosis; NIR-FLIVO 690 Tracer In vivo Assay

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Small volumes of product may become entrapped in the seal of the vial during shipment and storage; if necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the cap.

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Online datasheet: <https://stage.aaabiotech.com/assay-kits/nir-flivo-690-tracer/52768>