

Product Number

926-08946

Storage: -20°C
prior to reconstitution;
4°C after reconstitution

Revised: May 2011

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Doc #988-12111

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BrightSite™
Small Animal Imaging Agents

IRDye® 800CW 2-DG Optical Probe

Description

2-deoxyglucose (2-DG) is a glucose analog that utilizes the GLUT transporters for entry into the cell. Upon phosphorylation, it is not metabolized further and is effectively trapped within the cell¹. A well-established characteristic of many cancer cells is an elevated rate of metabolism; in particular, glucose uptake. ^{1,8}F-2-deoxy-D-glucose has been used for PET imaging as a tracer for tumor growth and metastasis to exploit elevated rates of glycolysis in tumor tissue.¹⁻⁴ Previously, a number of fluorophores, including N-(7-nitrobenz-2-oxa-1,3-diazol-4-yl) amino-labeled 2-DG (2-NBDG)^{5,6}, Cy5.57, and pyropheophorbide⁸, have been used to label 2-DG for tumor detection.

IRDye 800CW 2-DG has been shown to bind tumor cells in both *in vitro* assays and *in vivo* animal studies for multiple tumor types, including: A431(epidermal), SW620 (colon), MDA-MB-231 and SKBr3 (breast), U87 (glioblastoma), and PC3M-LN4 and 22Rv1 (prostate) carcinomas⁹. Specificity was demonstrated by successful blocking with unlabeled 2-DG and glucose. Efficiency of uptake may vary, depending on tumor type. Although this agent has been shown to target a wide range of tumors, it may not be effective for all tumor types. Figure 1 shows a subcutaneously implanted A431 tumor in a nude mouse imaged 24 hours after IRDye 800CW 2-DG intravenous injection (10 nmol).

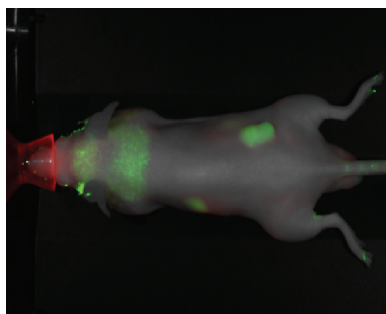


Figure 1. IRDye 800CW 2-DG (10 nmoles) 24 hours post-intravenous injection, localized in the subcutaneously implanted A431 tumor. Green represents the probe signal superimposed on a white light image of the mouse.

Material

IRDye 800CW 2-DG Optical Probe aqueous solution was passed through a 0.2 µm nylon membrane into a sterile polypropylene tube and then lyophilized. The recommended individual dose per mouse (body weight ~25 g) will range from 10-20 nmol, depending upon factors including tumor type, size, and location. Each tube contains 100 nmol of IRDye 800CW 2-DG Optical Probe.

IRDye 800CW Properties (in 1X PBS)

- Absorption maximum: 774 nm
- Emission maximum: 791 nm
- Appearance: Lyophilized solid

Storage and Handling

Protect from light. Upon receipt, immediately store at -20°C prior to reconstitution. When stored properly, this product is stable in the lyophilized state for 3 months. After reconstitution, store at 4°C. Reconstituted material should be used within 2 weeks.

Continued

Directions for Use

- Reconstitute material in 1 ml of sterile 1x PBS for a final concentration of 0.1 nmol/ μ l. If desired, filter sterilize the solution through a 0.2 μ m filter system prior to animal injection.
- Recommended administration: Inject 10-20 nmol intravenously via the tail vein.
- *In vivo* Imaging: For optimal imaging, allow adequate time for the unretained agent to clear from the animal's circulation. The time required to achieve optimal signal-to-noise ratios will vary for each tumor model system used. A suggested starting point is 24 hrs post-injection. For best results, determine the optimal imaging time empirically for each tumor model.

Precautions

The probe is processed through the liver, the major site for glycolysis, and excreted through the kidneys and bladder. This may cause increased background when imaging these regions.

References

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