Product Number
926-09374

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

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BrightSite™ Small Animal Imaging Agents

IRDye® 680RD BoneTag™ Optical Probe

Description

Calcium-chelating compounds such as tetracycline derivatives, xylenol orange, alizarin, calcein, and fluorescein have been used effectively for the detection of bone mineralization, growth, and morphological changes.[1-3]

These characteristics have been used to develop a near infrared (NIR) optical bone marker for small animal imaging. By conjugating the BoneTag optical probe to IRDye 680RD and IRDye 800CW, we have extended effective fluorescent signal detection to the NIR region without affecting the compound's ability to function as a marker of the mineralization process.

Using MC3T3-E1 (osteoblasts) for *in vitro* cell-based assays, the IRDye 680RD BoneTag probe shows specific binding characteristics. *In vivo* testing of IRDye 680RD and IRDye 800CW BoneTag optical probes are effective for skeletal labeling for imaging, which is unabated several weeks post-administration.

The ability to visualize bone anatomy and structures for an extended period facilitates the use of the bone targeting agent in conjunction with a second optical agent specific for a primary target (i.e., tumor tissue).

Material

The IRDye 680RD BoneTag solution was passed through a 0.2 µm nylon membrane into a sterile polypropylene tube and lyophilized. The product is supplied as a lyophilized powder from water in four tubes. The recommended individual dose per mouse (body weight ~25 g) will be approximately 2 nmol. Each of the four tubes contains 10 nmol of IRDye 680RD BoneTag optical probe.

Properties (in 1X PBS)

- Absorption maximum: 675 nm
- Emission maximum: 697 nm
- Appearance: Lyophilized

Storage and Handling

Protect from light. Upon receipt, immediately store at -20°C prior to reconstitution. This product is stable in the lyophilized state for 3 months at -20°C. Store the reconstituted product material at 4°C; stable for 4 weeks.

Directions for Use

- Reconstitute 10 nmoles material in 0.5 mL of sterile 1X PBS for a final concentration of 0.02 nmol/µL. If desired, filter sterilize the solution through a 0.2 µm filter system.
- Recommended administration: Inject 2 nmol intravenously via the tail vein or intraperitoneally.
- *In vivo* Imaging: It is important that unretained agent be allowed to clear from the animal's circulation prior to imaging. Suggested initial time frame for imaging is 24 hours post-injection. This agent will be visible for an extended length of time (up to 6 weeks) post-injection. For best results, determine the optimal imaging time empirically.

Precautions

The probe is processed through the kidneys and excreted through the bladder.

References

[1]Rahn, B. A. 2003. *European Cells and Materials* 5 (Suppl. 2):41.
[2]Malouvier, A., et al. 1993. *Med. Sci. Res.* 21:423-425.
[3]Lee, T. C., et al. 2003. *J. Anat.* 203:161-172.

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