

NiraWave™ nano 780

Optical imaging agent for pre-clinical imaging

1 vial (5 x 100 µL injections) # 130-095-695
 5 vials (25 x 100 µL injections) # 130-095-693

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1. Description

Components 44 mg NiraWave™ nano 780, optical imaging agent
 or
 5 x 44 mg NiraWave™ nano 780, optical imaging agent.

Capacity 5 x 100 µL injections after reconstitution
 or
 25 x 100 µL injections after reconstitution.

Product format NiraWave nano 780 is supplied as a lyophilized preparation. Reconstitution provides an isotonic solution containing 1.5 mg nanoparticle per mL.

Appearance Pale brown lyophilizate. Reconstituted: Clear, golden brown liquid.

Storage Store protected from light at 2–8 °C. The expiration date is indicated on the vial label.

For laboratory and animal research use only. **Warning: Not for human or animal therapeutic or diagnostic use. Make sure to comply with all laws and regulations governing research on animals.**

1.1 Background information

NiraWave nano 780 is a nanoparticulate near-infrared (NIR) fluorescence imaging agent specifically formulated for pre-clinical optical imaging (OI). It shows strong emission (fluorescence) in the NIR spectral range allowing for an increased tissue penetration. NiraWave nano 780 provides a broad range for excitation within the UV/VIS spectrum.

Upon intravenous injection, NiraWave nano 780 exhibits a prolonged blood circulation time. It is taken up by the reticuloendothelial system (RES) and accumulates in liver and spleen.

1.2 Applications

NiraWave nano 780 is indicated for use in OI of small animals, for example mice, to facilitate the visualization of the vasculature. Examples include fluorescence angiography.

1.3 Physico-chemical properties

Emission wavelength	Excitation wavelength
780 nm	below 740 nm

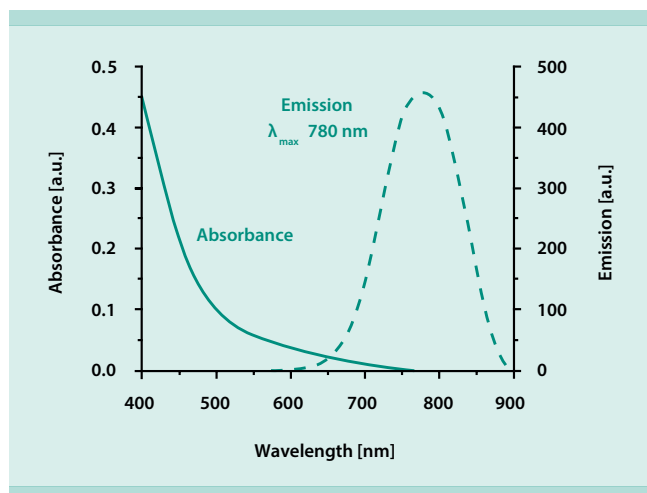


Figure 1: Absorption and emission spectra of NiraWave nano 780.

1.4 Requirements

- ☞ Sterile syringes and needles (27–30 G)
 Note: To allow sufficient volume for 5 x 100 µL injections per vial, the syringe/needle dead volume should be kept below 70 µL.
 Tip: Use insulin or tuberculin syringes.
- ☞ 70 % ethanol
- ☞ Sterile water for injection (WFI).

2. Protocol

2.1 Preparation

- ☞ Read the entire protocol before starting.
- ☞ To reconstitute the lyophilizate, inject 850 µL of sterile water for injection (WFI) into the vial. Do not use saline solution! Gently agitate the vial until a clear, golden brown solution is obtained.

- For a mouse weighing 20–30 g the typical injection volume is 100 μ L corresponding to a dose of 6 mg nanoparticles/kg body weight (for a 25 g mouse).

Note: Standard animal-handling procedures and local regulations must be followed.

2.2 Injection

- Reconstitute the NiraWave nano 780 lyophilizate prior to injection as described in section 2.1.
- Disinfect the septum with 70% ethanol. Let septum dry.
- Warm the mouse tail to dilate the veins and enhance their visibility.
- Inject NiraWave nano 780 (typically 100 μ L) via the lateral tail vein of the mouse.

Note: NiraWave nano 780 contains no preservatives. Avoid microbial contamination and discard any unused material after 24 hours.

2.3 Imaging

- Follow the imaging protocol as recommended by the manufacturer of your imaging system.
- To maximally excite NiraWave nano 780, the excitation wavelength must be at least 40 nm below the emission maximum of the dye.
- The recommended excitation and emission wavelengths of NiraWave nano 780 are noted in section 1.3.
- Imaging can be performed immediately and over an extended time period after injection.

Find examples of NiraWave nano 780-enhanced optical images at www.viscover.berlin.

3. References

- Ballou, B. *et al.* (2004) Noninvasive imaging of quantum dots in mice. *Bioconjugate Chem.* 15: 79–86.
- Gao, X. *et al.* (2004) In vivo cancer targeting and imaging with semiconductor quantum dots. *Nat. Biotechnol.* 22(8): 969–976.
- So, M. K. *et al.* (2006) Self-illuminating quantum dot conjugates for in vivo imaging. *Nat. Biotechnol.* 24(3): 339–343.
- Kuka, J. *et al.* (2015) Dual Modality Fluorescence and Computed Tomography System for Small Animal In Vivo Imaging. ICNP, Riga, Latvia, p31.

4. Related products

NiraWave™ C	# 130-095-154, # 130-095-155
NiraWave™ M	# 130-095-156, # 130-095-157
NiraWave™ Rocker	# 130-095-158, # 130-095-159

A comprehensive product portfolio for the imaging modalities MRI, CT, US, OI, SPECT, and PET is available at www.viscover.berlin.

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