

PSVue™ 794 Reagent Kit

PSVue™ 794 REAGENT KIT CONTENTS

Vial containing pre-weighted amount of apo-PSS794 solid dye (at least 1 mg)
Vial of diluent X (1 ml)
Vial of 4.2mM zinc nitrate solution in diluents X (1 ml)

Note: Absolute ethanol is needed to formulate the product but not provided

DESCRIPTION

PSVue™ 794, a near-infrared fluorescent probe for detection of apoptotic cells, bacteria and other anionic membranes.

The **PSVue™ 794** reagent kit contains components to provide a 1 mM solution of **PSVue™ 794** in aqueous solution. The structure of **PSVue™ 794** is shown in (Figure 1). The compound exhibits absorbance and fluorescence excitation maximum at 794 nm and emission maximum at 810 nm (Figure 2) and through its zinc(II)-dipicolylamine (Zn-DPA) functionality has been found to bind strongly to negatively charged bacterial cell walls [1, 2] (e.g. *S. aureus*, *E. coli*) and necrotic regions present in various tumors [3] (e.g. mammary, prostate, glioma) in vitro and in vivo. In particular, it has also been found to bind to the phosphatidylserine (PS) residues exposed on the cell surface of apoptotic cells making it a more cost effective alternative to fluorescently labeled Annexin V in various cell death assays [4]. The labeling vehicle provided with the kit (Diluent X) is designed to maximize dye solubility and is suitable for in vitro and in vivo use.

FIGURE 1

PSVue™ 794 Chemical Data

Molecular Formula: $C_{83}H_{95}N_{13}O_{23}S_2Zn_2$
Molecular Weight: 1837.6 g/mol
Extinction Coefficient: $1.1 \times 10^5 M^{-1} cm^{-1}$ (in water)
Quantum Yield: 0.14 (in water ; higher in organic solvent)

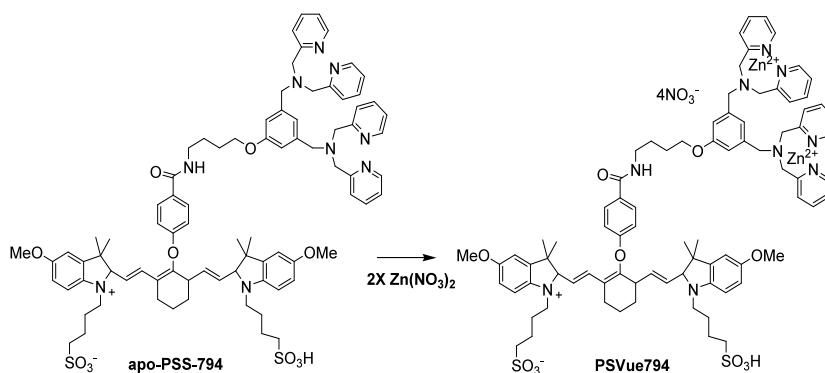
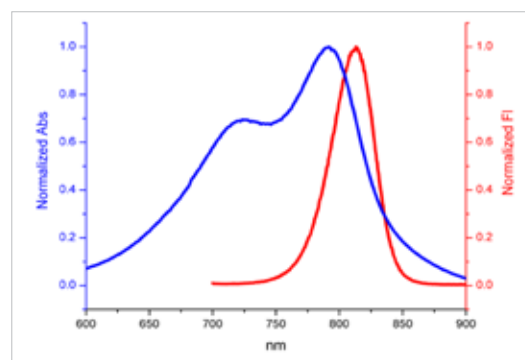


FIGURE 2

PSVue™ 794 Absorption and Fluorescence Emission Spectra
(5 μM solution; abs. max=794 nm; fl.em max=810 nm).



STORAGE/STABILITY

- For long term storage, the kit maybe refrigerated at 4-8oC. Bring to room temperature before use.
- Once formulated the **PSVue™ 794** dye stock must be protected from bright direct light and examined for crystals prior to use. If crystals are noted in the dye stock, it can be warmed slightly to 40oC in a water bath and sonicated or vortexed to redissolve the crystals.
- The **PSVue™ 794** 1 mM stock solution should be stored at 4°C and is best used within 5 days.

PROCEDURE**Formulation Procedure to Prepare 1mM stock solution:**

1. Using pre-weighed apo-PSS solid supplied, prepare a 2 mM solution of apo-PSS-794 (i.e. 2.92mg/mL) in Diluent X in the 2 mL vial. [Note: Make sure the solid is fully dissolved]
2. Add an equal volume of 4.2 mM zinc nitrate solution provided to the apo-PSS-794 from step 1.
3. Place the solution in a water bath at 40oC and shake frequently for 30 minutes to ensure complete complexation.
4. A clear green colored solution of 1 mM **PSVue™ 794** should be obtained.
5. Keep solution from step 4 in a water bath at 37-40oC until use.
6. Typical doses of **PSVue™ 794** for in vivo tumor imaging studies are 3-4 mgs/kg [3]. For bacterial imaging in mice a dose of 75uL of 1 mM **PSVue™ 794** has been reported [1, 2].

In Vitro Imaging Conditions:

Near infrared fluorescence images can be captured using a Photometrics Cascade 512B CCD and a Cy7 filter set (Exciter HQ710/75x, Dichroic Q750LP, Emitter HQ810/90m).

In Vivo Imaging Conditions:

Kodak 4000MM imaging station (or similar) configured for epi-illumination. Illuminate animal with filtered light at either:

- i. 755 ± 20 nm and collect emission fluorescence at 830 ± 10 nm (2, 3), or
- ii. 750 ± 10 nm and collect emission fluorescence at 830 ± 20 nm (3), or
- iii. 720 ± 35 nm and collect image intensity at 790 ± 35 nm by CCD camera during a 60s acquisition period [1, 2].

REFERENCES

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2. Leevy, W. M.; Gammon, S. T.; Johnson, J. R.; Lampkins, A. J.; Jiang, H.; Marquez, M.; Piwinica-Worms, D.; Smith, B. D. *Noninvasive optical imaging of staphylococcus aureus bacterial infection in living mice using a bis-dipicolylamine-zinc (II) affinity group conjugated to a near-infrared fluorophore*. Bioconjugate Chem. **2008**, 19, 686-692.
3. Smith, B. A.; Akers, W. J.; Leevy, W. M.; Lampkins, A. J.; Xiao, S.; Wolter, W.; Suckow, M. A.; Achilefu, S.; Smith, B. D. *Optical imaging of mammary and prostrate tumors in living animals using a synthetic near infrared zinc(II)-dipicolylamine probe for anionic cell surfaces*. J. Am. Chem. Soc. **2010**, 132 (1), 67-69.
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This product is offered for research purposes only and is not intended for human therapeutic or diagnostic use.

ORDERING INFORMATION

Cat. #	Description	Sizes
25101	PSVue™ 794 Reagent Kit	1 kit

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