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Catalog Number: P-1006

Product Name: PSVue®643, a near-infrared fluorescent probe for detection of apoptotic cells, bacteria and other anionic membranes.

Product Description:
0.25mL of a 1mM solution of PSVue 643 in water is provided. The structure of PSVue 643 is shown in Figure 1. The compound exhibits absorbance and fluorescence excitation maximum at 643 nm and emission maximum at 658 nm (Figures 2 and 3) and through its zinc(II)-dipicolylamine (Zn-DPA) functionality is able to bind to negatively charged bacterial cell walls [1] and phosphatidylserine (PS) residues exposed on the cell surface of apoptotic cells [2] making it a more cost effective alternative to fluorescently labeled Annexin V in various cell death assays [3].

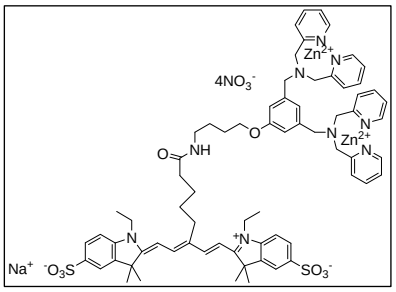


Figure 1. Structure of PSVue643

Chemical Data: Molecular Formula $C_{70}H_{80}N_{13}O_{20}S_2Zn_2Na$; Molecular Weight: 1641.4 g/mol; Extinction coefficient: 4.28 × 10^4 M^{-1} cm^{-1} (in water at 643nm);

Figure 2. PSVue643 Absorption Spectrum

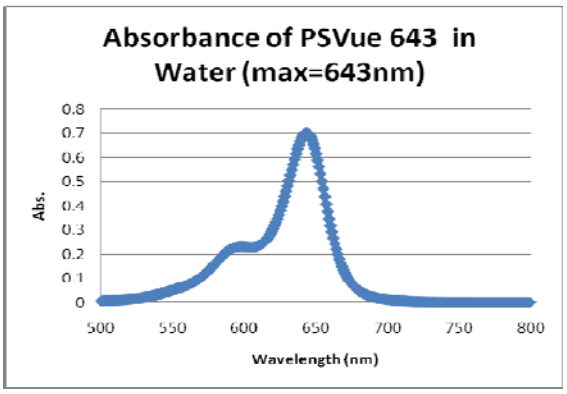
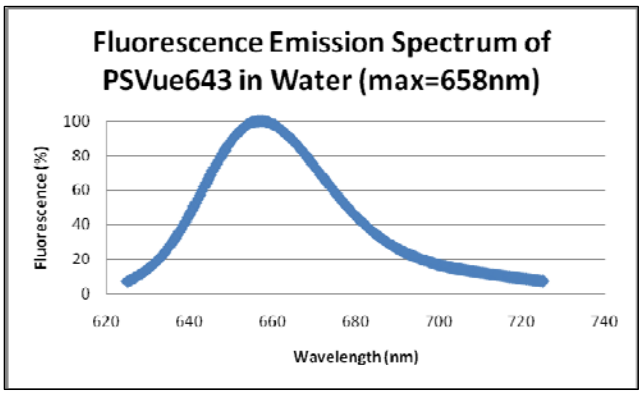


Figure3 : PSVue643 Fluorescence Emission Spectrum



Kit Component:

- Vial containing 0.25mL of a 1mM solution of PSVue643

Storage/Stability:

- For long term storage, the kit maybe refrigerated at 4-8°C. Bring to room temperature before use.
- The PSVue 643 dye vial must be protected from bright direct light.

In Vitro Cell Staining Conditions:

1. A typical concentration of PSVue643 used for *in vitro* cell labeling studies is 5-10µM [2, 4].
2. The recommended buffer for *in vitro* cell staining is a TES [N-tris-(hydroxymethyl)-methyl-2-aminoethane sulfonic acid] buffer system comprising (5 mM TES, 145 mM NaCl, pH=7.4), as

used in references [5], [6] and [7].TES buffer should also be used for any wash steps after labeling.

Note: PBS buffer can cause problems for *in vitro* cell staining using PSVue dyes due to the presence of anionic phosphate therefore it should NOT be used for *in vitro* studies.

In Vitro Imaging Conditions: Use Cy5 excitation conditions and filter set

For In Vivo Imaging:

1. For bacterial imaging in mice a dose of 100µL of 100µM PSVue 643 has been used [1] (i.e. dilute stock solution 10X and inject 100µL)

In Vivo Imaging Conditions: Use Cy5 excitation conditions and filter set

References:

1. Professor Bradley Smith, University of Notre Dame, personal communication.
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3. Hanshaw RG and Smith BD. *New reagents for phosphatidylserine recognition and detection of apoptosis*. Bioorg. & Med. Chem. 2005, 13, 5035-5042
4. 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.
5. Leevy, W. M.; Gammon, S. T.; Jiang, H.; Johnson, J. R.; Maxwell, D. J.; Marquez, M.; Piwinica-Worms, D.; Smith, B. D. *Optical imaging of bacterial infection in living mice using a fluorescent near-infrared molecular probe*. J. Am. Chem. Soc. **2006**, *128*, 16476-16477.
6. DiVittorio KM, Johnson JR, Johansson E, Reynolds AJ, Jolliffe KA and Smith BD. *Synthetic peptides with selective affinity for apoptotic cells*. Org. Biomol. Chem. 2006, 4, 1966-1976.
7. Hanshaw RG, Lakshmi C, Lambert TN, Johnson JR and Smith BD. *Fluorescent detection of apoptotic cells by using zinc coordination complexes with a selective affinity for membrane surfaces enriched with phosphatidylserine*. ChemBioChem, 2005, 6, 2214-2220.

This product is offered for research purposes only and is not intended for human therapeutic or diagnostic use.

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