

Northwest Life Science Specialties, LLC

Product Number
Product Name

NWT-BMPO
NWLSS™ **BMPO** Spin Trap
5-tert-butoxycarbonyl 5-methyl-1-pyrroline N-oxide

Formula

$C_{10}H_{17}NO_3$

Molecular Weight

199.25

Product Specification

Purity: >99% (NMR), EPR grade

Appearance: Off-white, Crystalline

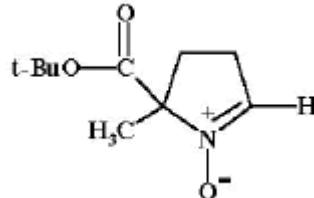
Solubility: Water Soluble

Storage: *Short Term:* Room Temp.

Long Term: <-20°C (desiccated)

Price

\$375 per 75 mg



EPR & "Spin Trapping"

Electron Paramagnetic Resonance (EPR) spectroscopy is the only known method to "visualize" free radicals. However, direct detection of some free radicals (e.g., superoxide and hydroxyl radical) is very difficult or impossible in solution at room temperature. Spin trapping is a technique developed in the late 1960s where a nitronate or nitroso compound reacts with a target free radical to form a stable and distinguishable free radical to be detected by EPR spectroscopy. Spin trapping is the only known method that can detect free radicals such as superoxide and hydroxyl radical *specifically* in biological systems.

Advantages of BMPO compared to DMPO, DEPMPO and EMPO

BMPO is a newly discovered nitronate spin trap from Prof. Kalyanaraman's lab at Medical College of Wisconsin. It is most suitable for the specific *in-vivo* or *in-vitro* detection of short-lived superoxide, hydroxyl radical and thiyl radical, by forming distinguishable adducts measurable with EPR spectroscopy. Other nitronate spin traps such as DMPO do not distinguish superoxide and hydroxyl radical easily because of spontaneous decay of the DMPO-superoxide adduct ($t_{1/2} = 45$ seconds) into the DMPO-hydroxyl adduct. Similar to the recently developed spin traps DEPMPO and EMPO, BMPO-superoxide adduct does not decay into an hydroxyl adduct. The BMPO superoxide spin adduct also has a much longer half-life ($t_{1/2} = 23$ minutes). Additionally, the solid cyclic nitronate BMPO, highly purified by crystallization, can be handled and stored for extended periods of time without fear of decomposition. In comparison, DEPMPO and EMPO are liquid spin traps that are often contaminated with nitroxide impurities and have limited shelf life.

Reconstitution Guidelines

A 1.0 M stock solution can be made by adding 375 mL of 100 mM PBS buffer containing 100 uM DTPA (diethylenetriamine pentaacetic acid) directly to the vial provided. Unused stock solution may be saved by storing at -20°C for short periods of time (~several days). This is only a general guideline; specific portions can be weighed out to make up a stock solution with different concentration if desired. Other buffer solutions and solvent can also be used.

References

1. Zhao H., Joseph J., Zhang H., Karoui H. & Kalyanaraman B., Free Rad. Biol. Med. 31, 599-606 (2001).
2. Khan N., Wilmot C. M., Rosen G. M., Dmidenko E., Sun J., Joseph J., O'Hara J., Kalyanaraman B. & Swartz H. M., Free Rad. Biol. Med. 34, 1473-1481 (2003).